BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

IN THE MATTER OF:	)	
	)	
CITGO PETROLEUM CORPORATION and PDV MIDWEST REFINING, L.L.C.,	)	
	)	PCB_____
Petitioners,	)	(Variance - Water)
	)	
v.	)	
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.		

NOTICE OF FILING

To:

John Therriault, Assistant Clerk Illinois Pollution Control Board 100 West Randolph, Suite 11-500 Chicago, IL 60601	John J. Kim, Interim Director Illinois Environmental Protection Agency 1021 N. Grand Avenue East, P.O. Box 19274 Springfield, IL 62794-9274
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Please take notice that on December 20, 2011, we filed electronically with the Office of the Clerk of the Illinois Pollution Control Board the attached **Petition for Extension of Variance**, a copy of which is served upon you.

CITGO PETROLEUM CORPORATION and
PDV MIDWEST REFINING, L.L.C.

By: _____
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PETITION FOR EXTENSION OF VARIANCE

PDV Midwest Refining, L.L.C. ("PDVMR") and CITGO Petroleum Corporation petition the Illinois Pollution Control Board ("Board") for an extension of dates to undertake certain actions as contained in an existing variance authorizing discharges of Total Dissolved Solids ("TDS"). See PCB 08-33, issued May 15, 2008. PDVMR is the owner of the Refinery described herein, and CITGO Petroleum Corporation is the operator of the Refinery. (Hereafter, these Petitioners will be jointly referred to as "CITGO"). This Petition is brought pursuant to Section 35 of the Act, 415 ILCS 5/35, and Part 104 of Chapter 35 of the Illinois Administrative Code, 35 IAC § 104.100 et seq. In support of this Petition, CITGO states as follows:

OTHER PROCEEDINGS

1. In November, 2004, CITGO first sought a variance from the Board's water quality standards for TDS in relation to an agreement CITGO had reached with U.S. EPA, the State of Illinois and other states to reduce emissions as embodied in a Consent Decree. Under that Consent Decree, CITGO installed a Wet Gas Scrubber in the Fluid Catalytic Converter Unit

("FCCU") which results in a purge stream with dissolved solids and sulfates that is fed into the Refinery wastewater treatment system. The Board initially granted that relief in an opinion and order in PCB 05-85 entered April 21, 2005. ("Initial Variance")

2. Subsequent to the Initial Variance, based on new data and changes in applicable regulations downstream of the Refinery, CITGO sought certain changes to the variance conditions which the Board had imposed in the Initial Variance. After CITGO filed an Amended Petition, the Agency filed its Recommendation with certain conditions to reflect the changed circumstances. The Board subsequently granted the variance in an order entered May 15, 2008. *See Citgo Petroleum Corporation and PDV Midwest Refining, L.L.C. v. IEPA*, PCB 08-33 (Opinion and Order Entered May 15, 2008) (Hereinafter the Prior Variance). That order is attached hereto as Exhibit A and incorporated here by reference.

3. Since the granting of the Prior Variance, several other material facts have changed while the basic environmental situation has not. Although the variance issued in PCB 08-33 anticipated the removal of the TDS standard in a pending rulemaking, that has still not been resolved. (Prior Variance at p.14, citing *In The Matter of: Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System (CAWS) and the Lower Des Plaines River: Proposed Amendments to 35 Ill. Adm. Code 301, 302, 303 and 304*, R08-09 (hereinafter, R08-09). R08-09 is still pending, and there is no indication that it will conclude at any time prior to the expiration of the existing variance, let alone the conditions of the variance that begin to come due in the months and years prior to the variance's expiration. *See* R08-09 (Subdockets C & D), Order Entered August 4, 2011, at 7 (granting delay in Subdocket D that was alleged by environmental groups to push the "*start date* for Subdocket D hearings until 'sometime in

2014.'" (emphasis added)). As of the date of submission of this Petition, the Hearing Officer has extended again the date for setting a time for submission of comments in Docket C until January 3, 2012. (see Order entered November 30, 2011).

4. As noted in the prior variance request, the Board increased the water quality standard for total dissolved solids from the ExxonMobil Outfall in the Des Plaines River to its confluence with the Kankakee River. *See Revisions to Water Quality Standards for Total Dissolved Solids in the Lower Des Plaines River ExoxonMobil Oil Corporation*, R06-24 (Site-Specific Rulemaking - Water), Board Order (February 15, 2007). Second, the Board has eliminated the water quality standard for TDS in General Use waters. *See Triennial Review of Sulfate and Total Dissolved Solids Water Quality Standards*, R07-09, (Rulemaking - Water) Opinion and Order Entered September 4, 2008. This leaves the odd situation of there being a water quality standard for TDS in the Chicago Sanitary & Ship Canal ("Canal"), but no TDS standard at all in the general use waters downstream.

5. Although CITGO participated in the proceedings in R07-09 and requested that the Board exempt its discharge from meeting a TDS water quality standard, the Board declined to make such a change. Instead, the Board suggested that CITGO should seek to extend the dates for taking certain actions as expected by certain conditions of the variance. *See Id.*, p. 30. CITGO did so, which resulted in the Prior Variance that anticipated removal of these standards in the R08-09 proceeding, as noted above. CITGO has also urged the Board to proceed with a separate docket for the stream segment at its discharge point – to address the segment affected by the electric fish barrier; the Board declined to do so. At this time, the R08-09 Subdockets C and D are being held in abeyance pending submission of a proposed resolution by various parties

relating to certain of the major issues in the proceeding. As a result, a resolution of TDS issues in the Ship Canal which necessitates this request are still more than a year away and there is no firm prediction when action may be taken.

6. The Agency has proposed to remove TDS as a standard for Secondary Contact waters, including the Chicago Sanitary & Ship Canal. Since we cannot predict when or how the Board may rule on that issue, this Petition has confined itself to the regulations now in effect and to the conditions in the Ship Canal upstream of the Refinery, where exceedances of the existing TDS standard exist during snow-melt conditions.

7. Because no action has been taken on TDS standards, and the regulatory conditions that led to the Prior Variance are unchanged, CITGO is filing this Petition to extend the prior variance, as per 35 Ill. Admin. Code 104.210. CITGO has undertaken the activities required by the prior variance as required by the prior schedule, and would propose that the requested variance build upon the prior variance by making the following revisions to the prior variance order (deletions to the text of the Order in PCB 08-33 are shown in strike-through and additions are underlined):

> The Board grants CITGO and PDVMR a variance from the TDS water quality standards of 35 Ill. Admin. Code 302.208(g) and 302.407, subject to the following conditions:
>
> 1. The duration of the variance relief from the identified TDS water quality standards is from ~~May 15, 2008~~ **[date of Board order]** through ~~May 15, 2009~~ **[5 years after the date of Board order]**. This variance modifies and extends certain conditions of the variance in ~~PCB 05-95, entered April 21, 2005.~~**08-33, entered May 15, 2008.**
>
> 2. This variance applies only to petitioners' Lemont Refinery at 135th Street and New Avenue in Lemont, Will County, regarding elevated TDS levels in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent

Decree entered January 26, 2005, in the United States District Court for the Southern District of Texas, Case No. H-04-3833.

~~3. Unless and until the United States Environmental Protection Agency (USEPA) approves the elimination of the general use water quality standard for TDS, petitioners must monitor and collect samples from the Des Plaines River near the I-55 bridge three times per week, during the winter months (December 1 to March 30), and analyze for TDS. Petitioners must submit the TDS sample results monthly to the Illinois Environmental Protection Agency (IEPA).~~

3. Unless and until USEPA approves the elimination of the TDS water quality standard for the Chicago Sanitary and Ship Canal (S & S Canal), petitioners must monitor their water intake from the S & S Canal two times per week, during the winter months (December 1 to March 30) for TDS. Petitioners must submit the TDS sample results monthly to IEPA.

4. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must monitor TDS in the effluent from Outfall 001 two times per week, during winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to IEPA.

5. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must diligently attempt to identify any relationship between the TDS levels in the effluent from Outfall 001, and the water quality samples required to be collected pursuant to paragraphs 3, and 4, ~~and 5~~ of this order. ~~To the extent there is a correlation between effluent TDS concentration and any exceedence of an applicable water quality standard for TDS, petitioners must determine the time period that the water from the Fluid Catalytic Converter Unit (FCCU) wet gas scrubber bleed may require additional management or treatment, including holding, treatment, or alternative disposal~~.

6. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by ~~45~~ **50** months from the date of the Board order, petitioners must prepare a TDS water quality management plan **to identify and minimize its contributions of TDS to the Ship Canal utilizing Best Management Practices** ~~to address any contribution from the FCCU wet gas scrubber bleed as determined by the analses performed pursuant to paragraph 6 of this order.~~ Elements to be considered in developing this plan ~~must~~ may include a system to retain, treat, or dispose of the FCCU wet gas scrubber bleed or any other approach to eliminate wet gas scrubber bleed from Outfall 001 during periods when applicable TDS water quality standards are exceeded. Other options to be considered may include holding tanks, ~~deep well disposal, crystallization, and any other technology or management strategy identified~~ **and de-icing and softening practices at the Lemont Refinery**.

7. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by ~~46~~ **51** months from the date of the Board order, petitioners must design the TDS water quality management plan/**Best**

Management Plan for the conditions identified in paragraphs 5 and 6 ~~7~~ of this order and submit the plan to IEPA.

8. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by ~~48~~ **52** months from the date of the Board order, petitioners must submit to IEPA a wastewater construction permit application for any elements of the TDS water quality management plan/**Best Management Plan** for which permits or amended permits are required.

9. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by ~~54~~ 57 months from the date of the Board order, petitioners must begin construction as needed for an FCCU wet gas scrubber bleed control system and/or implement the TDS water quality management plan/ **Best Management Plan**.

10. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 60 months from the date of the Board order, petitioners must operate any equipment required to be constructed by the TDS water quality management plan/**Best Management Plan** as needed so as to not cause or contribute to any exceedences of applicable water quality standards ~~due to the operation of the wet gas scrubber identified in paragraph 2 of this order~~.

The proposed changes reflect the information contained in this Petition and the adjusted dates are requested so as to avoid unnecessary activities. Although the Prior Variance lasts for five years, it had the effect of only providing three years of relief due to the requirements that were requested by the Illinois Environmental Protection Agency (the "Agency"). In the next few months, CITGO would be required to undertake various substantive design and other measures which may either not be necessary, or different requirements may be created that are not now expected. Similarly, this proposed five-year variance will really only provide three years of relief by moving the prior schedule back three years. However, if the Board removes the existing water quality standard for TDS in the Ship Canal, this variance will become moot according to its terms, and not require further action by the Board.

8. Because the prior order was based on the date the Board granted the variance, we are proposing to use the same structure – to tie the activities and conditions to the start of the

variance. This is entirely appropriate given the delays in R08-09, delays which have occurred due to conditions beyond the control of CITGO.

9. CITGO has collected the data as required by Paragraphs 3, 4, and 5 of the Order in PCB 08-33. That information relating to TDS is included within Exhibit B. Based on discussions with the Agency with respect to EPA's actions with respect to the elimination of the TDS water quality standard in the general use waters downstream of the I-55 Bridge, condition 3 is no longer applicable and the Agency agreed that monitoring at that location could be discontinued. In addition, CITGO has collected influent data relating to chlorides upstream of the Refinery; that data is included in Exhibit C.

10. CITGO has also collected TDS information in an effort to address the requirements of paragraph 6, in particular: "To the extent there is a correlation between effluent TDS concentration and any exceedence of an applicable water quality standard for TDS, petitioners must determine the time period that the water from the Fluid Catalytic Converter Unit (FCCU) wet gas scrubber bleed may require additional management or treatment, including holding, treatment, or alternative disposal." This information confirms the modeling done before the first variance was filed and the relative quantity of sulfates and TDS in the discharge. As demonstrated elsewhere in this Petition, this information demonstrates that the water from the FCCU unit is a minor contributor to the normal TDS levels in the Ship Canal, and an even smaller contributor to the increased TDS levels in the Ship Canal during periods of snow-melt. Therefore, CITGO submits that it has satisfied the intent of the Prior Variance Order in the final sentence of Condition 6.

BACKGROUND ON REFINERY

11. The Refinery was constructed during the period 1967 through 1970. It became operational in late fall of 1969. Currently, the average daily production is 168,626 barrels per day. The Refinery employs approximately 530 people.

12. Approximately twenty-five different products are produced at the Refinery, including gasolines, turbine fuels, diesel fuels, furnace oils, petroleum coke, and various specialty naphthas which can be manufactured into many intermediate products, including antifreeze, dacron, detergent, industrial alcohols, plastics, and synthetic rubber. Ninety percent of the Refinery's output goes into making gasolines, diesel fuels, home heating oils, and turbine fuels for use in Illinois and throughout the Midwest.

13. The Refinery draws from and discharges to the Canal. The Refinery takes approximately 5.0 million gallons of water daily from the Canal, and it discharges approximately 4.5 million gallons to the Canal, the difference being cooling tower evaporation and steam losses. The wastewater effluent contains dissolved solids derived from compounds present in crude oil that are removed from the crude by various Refinery operations, as well as concentrating the TDS present in the intake water from the Canal from the evaporation cooling.

14. The Board adopted Title 35 § 302.208(g) to control TDS in the Illinois River system and § 302.407 to control TDS in the Canal. The need for the prior Variance arose due to the potential impact both in the Canal and downstream at the I-55 Bridge over the Des Plaines River.

15. The Refinery operates under a National Pollutant Discharge Elimination System ("NPDES") permit (No. IL 0001589), issued by the Illinois Environmental Protection Agency ("IEPA"). The NPDES permit includes outfall 001 at the Refinery at river mile 296.5 on the

Canal (Latitude 41°38'58", Longitude 88°03'31"). The current NPDES permit was re-issued and modified on June 22, 2007; it does not have effluent limits on TDS, but it does reflect the likelihood of further actions by the Board with respect to the Refinery. It is attached as Exhibit D. CITGO filed a timely application for renewal of that NPDES permit, which is pending before the Agency.

16. The Refinery includes a physical/chemical and biological wastewater treatment plant. The treatment plant performs primary, secondary, and tertiary treatment on the generated wastewater before it is discharged into the Canal. The original wastewater treatment plant, which began operation in 1969, included two oil/water separators, a flow equalization tank, a primary clarifier, an activated sludge system, and a polishing pond. Several wastewater treatment plant modifications have been made since the original installation. Major changes to the system induced gas flotation, new oil/water separators, process water storage tanks, a new aeration basin, a high efficiency aeration system, and a second final clarifier.

17. The primary treatment portion of the current plant consists of four sour water strippers for ammonia and sulfide removal, oil/water separators for free oil removal, and equalization tanks.

18. Effluent from the equalization tanks flows to the secondary treatment plant which consists of induced gas flotation ("IGF") and activated sludge treatment system. The activated sludge system includes three aeration basins operated in parallel with a total aeration basin volume of 1.92 million gallons. Aeration is provided by a fine-bubble diffused aeration system. Activated sludge is settled in two 100-ft. diameter secondary clarifiers. Within the aeration basin, phosphorous is added as a nutrient for biological organisms. During the winter, steam is

injected to the equalization tank to maintain operating temperatures at a minimum of 70°F in the aeration basin effluent.

19. The tertiary system consists of a 16-million gallon treated water basin. The purpose of the basin is to remove any carryover solids from the secondary clarifier. The basin also serves as a water supply for fire protection.

20. Since 1987, the Refinery has been subject to a site-specific rule or an adjusted standard concerning ammonia discharges, has made improvements to the wastewater treatment system, and has continued its efforts to reduce the contaminants in its wastewater. In the last eleven years, the Refinery has invested $45 million in various upgrades to the wastewater treatment system. These improvements include: induced gas flotation (with polymer addition) in 2000, additional strippers in the sour water system in 2003, upgrading diffused aerators in Cell B in 2003, upgrading the feed system for phosphoric acid in 2006, upgrading diffused aerators in Cell A in 2006, a purge treatment unit (PTU) for scrubber discharge in 2007, upgrading diffused aerators in Cell C in 2007, and adding 4,000,000 gallons of tankage to enhance solids removal as a pre-treatment measure before the water treatment plan

EXISTING WATER QUALITY

21. The Refinery discharges into the Ship Canal, upstream of the Lockport Lock & Dam, immediately above the "electric fish barrier," and within the safety zone established by the Coast Guard. Below the dam, the Canal merges with the Des Plaines River, passes through Joliet, and 11 miles downstream of Joliet passes beneath the I-55 Bridge. Until the I-55 Bridge, the receiving waters are designated as Secondary Contract waters; below the I-55 Bridge, the Des Plaines River is designated as General Use water, the General Use waters begin 18.5 miles

below CITGO's outfall. Illinois has adopted different water quality standards for Secondary Contact and General Use streams. The relevant standards are as follows:

	General Use	Exxon-Mobil[1]	Secondary Contact
Total Dissolved Solids (TDS) mg/L	Removed in R07-09	1,686	1,500

22. Water Quality Based Effluent Limits are based on low flow stream conditions (7-day, 10-year). Estimated values for stream low flows are listed below:

	Low Flow, MGD
Canal at CITGO Refinery	850
Des Plaines River at I-55 Bridge	970

23. Under the Consent Decree, CITGO installed a wet gas scrubber in the Fluid Catalytic Converter ("FCC") unit at the Refinery to remove sulfur dioxide air emissions. The sulfur dioxide is ultimately converted to sodium sulfate salts which are contained in a purge stream. This purge stream is then discharged into the Refinery wastewater treatment system. The design specifications for the wet gas scrubber blowdown limit the exit temperature to 90°F, before discharge to the treated water basin.

24. The CITGO discharge has only a modest theoretical impact on the Ship Canal. At stream low flow conditions, and loadings from CITGO's Outfall 001, which includes the Wet Gas Scrubber contribution, the sulfate and TDS levels in the waterways after complete mixing based on actual discharge concentrations and flow, would increase as follows:

[1] Limit applies during winter months from point of discharge to confluence of lower Des Plaines River with Kankakee River.

	Incremental Increase	
	Canal	Des Plaines River @I-55 Bridge
Sulfate, mg/L	21	18
TDS, mg/L	29	25

REGULATORY CONSTRAINTS

25. Effluent Limits - There are no specific Illinois effluent limits on sulfates or TDS. Therefore, to the extent there are water quality impacts, effluent limits would be based on Water Quality Based Effluent Limits ("WQBELs") after mixing.

26. Mixing Zone - Under Illinois regulations, the maximum allowable mixing zone is 25 percent of the stream flow. Water quality standards must be achieved at the edge of the mixing zone. Using CITGO's actual discharge loadings from Outfall 001, which the WGS discharge is part of, and 25 percent of the Canal's low flow yields the following incremental increases in concentrations at the edge of the mixing zone:

	Projected Increase in WQ at Edge of Mixing Zone
Sulfate, mg/L	83
TDS, mg/L	116

27. Categorical Limits - U.S. EPA has promulgated categorical limits on various industries, including the petroleum refining industry. These regulations found, in 40 CFR 419, do not include specific effluent limits on sulfates or TDS. The Board has previously found that the Refinery wastewater treatment system goes beyond Best Available Technology ("BAT") requirements.

28. Impaired Waterways - Section 303(d) of the Clean Water Act requires states to identify impaired waterways and the causes of impairment and then develop what is essentially a waste load allocation for addressing the impairment. Illinois prepared its list of impaired waterways in 1998: 738 segments were identified. Illinois also developed a priority list for addressing these 738 segments. According to IEPA's *Illinois Water Quality Report 2010*, the entire stretch of the Canal and the downstream Des Plaines River both are listed as impaired waterways, for a variety of reasons. However, none of the reasons listed are for TDS.

29. CITGO has conducted the water quality sampling for TDS as required by the variances from 2005. These data continue to show elevated TDS and chloride levels during periods of snow-melt conditions. The TDS and chloride results of the sampling upstream of the Refinery are included in Exhibits B and C, respectively. These data continue to show episodic elevated chloride and TDS levels that are associated with snow melt run-off conditions. The TDS levels recorded in the Ship Canal – a high in 2008 of 4,468 mg/L; a high in 2010 of 2,047 mg/L, and three results in 2011 of over 2,900 mg/L – continue to show the effect of urban runoff from snow-melt. By comparison, the combined increase in TDS levels from the ExxonMobil FCCU project with the CITGO FCCU project is quite small—the maximum additional TDS levels at the I-55 bridge was projected to be 72 mg/L. See Petition, ¶26 in R 06-24 (February 7, 2006). That projection is consistent with the recent sampling data collected by the Refinery. By comparison, the TDS and chloride data in the Ship Canal upstream of the Refinery has much greater influence and variation. Exhibit B shows the average and maximum TDS levels and Exhibit C the average and maximum chloride levels in the Ship Canal immediately upstream of the CITGO discharge. In the Ship Canal, the maximum level for each parameter during snow melt conditions is 2 to 4 times the average. Compared to the 72 mg/L TDS level from the WGS,

the variation in the stream between average and maximum is greater than 1000 mg/L and has been over 2500 mg/L greater. Thus the variability due to run-off may be 12 to 30 times the typical WGS discharge. Further, the maximum TDS levels in December, 2007 at the I-55 Bridge were the same as recorded before the WGS discharges began. Thus, the contribution from the WGS, the activity that lead to the Initial Variance request, has nothing to do with the exceedances of the TDS standard in the Ship Canal.

30. TDS levels were observed over a nearly three-week-long stretch during February 2008 at the I-55 Bridge. The length of time and the volume of water required is greater than assumed when CITGO put together its compliance plan for the variance in PCB 05-85. At the time of the 2005 variance, the available data on TDS levels in the Chicago Sanitary & Ship Canal and at the I-55 Bridge were those data being collected by the Metropolitan Water Reclamation District of Greater Chicago. Based on the data available when the first variance was requested, the Refinery did not expect the duration of elevated TDS levels to last for such a long period of time. It is also believed that the TDS regulations would be eliminated, and hence that measures such as wastewater storage would not be required. However, the data collected pursuant to the Initial Variance for the Refinery indicates that elevated TDS levels could still extend over a three week period due to prolonged snowmelt conditions.

31. Of course, the length of time for the elevated TDS levels to continue has a dramatic effect on planning any corrective measures. The Refinery design average permitted discharge is 5.79 MGD. The quantity of tankage needed to store that volume of wastewater would be substantial (perhaps 100 million gallons for a 20-day period, assuming this period of time is a worst case scenario). These circumstances are further support for adoption of a dynamic

and flexible mechanism, such as a "Best Management Practices" approach to minimize TDS discharges into the Ship Canal We submit that any corrective measures will need to be flexible and that some sort of a Best Management Practices plan should be a key element of any final measures. And of course, the Board has yet to either delete the TDS standard or to adopt some other requirement, such as the Agency-proposed chloride standard.

32. Based on the foregoing, CITGO submits that the relief here requested is not inconsistent with the effluent standards and areawide planning criteria under the Clean Water Act.

ARBITRARY AND UNREASONABLE HARDSHIP

33. The existing variance was caused by the Consent Decree, to which the Agency is a party, lodged by U.S. EPA to substantially reduce emissions of sulfur dioxide, nitrogen oxides, and Particulate Matter. CITGO agreed to these reductions and has invested over $140 million at the Refinery, most of which costs are for the very wet gas scrubber which generates the TDS and sulfates identified above. These investments are projected to reduce SO_2 emissions by 15,300 tons/year, NO_x emissions by 1,100 tons/ year, and PM emissions by 92 tons/year.

34. The relative contribution from CITGO is readily within the assimilative capacity of the waterway, and there is no water quality violation for TDS or chlorides in the Canal, except in association with snow melt conditions.

35. Under the rule proposed in R08-09, TDS would be removed as a water quality parameter.

36. CITGO has investigated methods of avoiding releasing the wastewater from the FCC to the existing wastewater treatment system, including deep well disposal and removal technologies.

37. The Agency has rejected the deep well disposal option because in its view this would constitute a Class I injection well. Class I injection wells are permittable only where there exists a cap rock to prevent the injected fluids from migrating upwards. In northeastern Illinois, no cap rock exists over the depth where disposal wells are drilled. This alternative is not viable.

38. Technologies for removing sodium sulfate from a dilute aqueous stream are limited. Electrodialysis has never been applied in the chemical or refinery industries on the scale required at the Refinery. Biological sulfate reduction is theoretically possible, but this will not reduce the overall TDS concentration merely by replacing the sulfate ions with carbonate ions. The concentration of sodium sulfate is too high for reverse osmosis concentration, as scaling problems would develop.

39. The sole technology potentially available is evaporation, an energy intensive approach, which will result in increased carbon dioxide emissions to the atmosphere. The evaporation approach would require a multi-effect evaporator to minimize energy consumption. A falling film evaporator with mechanical vapor recompression ("MVR") is the most energy efficient approach. Subsequent crystallization would produce a dry sodium sulfate by-product. Whether this by-product would be of sufficient purity to have any market value has not been determined. Exhibit E depicts a conceptual process flow diagram of a falling film evaporator with MVR. A feed pump lifts the steam to the top of the evaporator, where the water falls through steam-heated tubes. Once sufficient water is driven off, the stream is cooled, resulting in

sodium sulfate crystals in the crystallizer. The water vapor is compressed and routed to the shell side of the falling-film tubes to become steam. The sodium sulfate crystals are directed to a centrifuge to concentrate the solids, followed by a dryer producing a dry sodium sulfate by-product. There is, however, no proven technology for the removal of TDS in a cost-effective manner.

40. The capital cost in 2011 dollars for applying this technology to this wastewater stream is on the order of $8,400,000. Operating costs, including depreciation, are estimated at $1,200,000 per year, with 40 percent of this amount representing energy costs. The above cost estimate assumes the Refinery has sufficient steam capacity, and that a new boiler is not required. Moreover, CITGO is not aware of a situation where such a massive evaporation system has been constructed or operated, and it further notes the increased energy demand and emission impact that such an evaporation system would entail. Further investigation would be warranted before such an approach were pursued.

41. Since the grant of the Initial Variance, activities directed by the Army Corps of Engineers have had a substantial negative impact on the stretch of the Ship Canal immediately below the Refinery discharge. To prevent "Asian Carp" from reaching Lake Michigan, the so-called "electric fish barrier" has been enhanced and expanded. The Board is well aware of these measures. (See the November 8-9, 2010 hearings in Subdocket C on the issue of Asian Carp and other invasive species, including the impact of measures taken to control such species). CITGO hereby attaches its testimony on the issue submitted in R08-09. (See Testimony of R. Garibay, R08-9, Subdocket C, Exhibit 420; Testimony of J. Huff, R08-9, Subdocket C, Exhibit 437); Exhibits F and G, respectively. These water quality conditions and use of Ship Canal are clearly

activities unrelated to CITGO, but they have a substantial impact on aquatic life and the uses of the Ship Canal adjacent to and downstream of the Refinery.

42. Requiring CITGO to install evaporation wastewater treatment for the scrubber discharges into the wastewater system would impose an arbitrary and unreasonable hardship. CITGO is not the cause of any current water quality standard exceedance; upstream conditions in the Ship Canal from snow melt conditions exceed the existing TDS standard, and the Agency has asked the Board to remove that standard as well. Further, CITGO is investing substantial monies in the Refinery to substantially reduce air emissions and substantially reduce the overall environmental releases from the Refinery, and the wastewater discharge involved is relatively modest. Hence, requiring control of the increased wastewater discharge would impose an arbitrary and unreasonable hardship on CITGO.

43. Moreover, the rulemaking proceedings in R08-09 are moving quite slowly. CITGO attempted to move forward on a set of regulations for the segment of the Ship Canal affected by the electric fish barrier. (Motion for an Expedited Subdocket Addressing Use C, Filed in R08-9, Subdockets C-D, June 14, 2011). Instead, the schedule for initiation of the water quality standards, for TDS and other materials, has been pushed back and may not even begin until the middle of next year. In the meantime, the prior variance would require CITGO to undertake several measures to address the relative amount of water from the FCCU, even though that is not a substantial or relevant source of TDS water into the wastewater system at the Refinery (See Conditions 7, 8, 9, 10 and 11 in Exhibit A) and even though a standard for chlorides might be adopted instead. Undertaking those measures as required by the current variance order, and in light of the pending rulemaking to address the current uses, water quality

and other conditions of the Sanitary & Ship Canal would impose unnecessary costs and burdens on CITGO without any meaningful environmental benefit, and hence would constitute an arbitrary and unreasonable hardship.

44. CITGO submits that a TDS water quality management plan such as to be required by the Variance conditions proposed herein should take the form of a Best Management Practices Plan to address TDS and snow-melt run-off conditions. The flexibility of such a plan would fit the episodic nature of the water quality conditions. Moreover, BMPs are being used in other river basins to address snow melt run-off and would be appropriate for this matter. It is readily acknowledged that highway de-icing practices are the key contributor to exceedences in the TDS water quality standard. Highway de-icing will preclude achievement of any chloride water quality standard adopted on the Ship Canal. These measures are cost-effective and provide relief for point source dischargers from conditions created by non-point sources. This same Best Management Practices approach proposed herein could be adopted to allow for relief during snow melt run-off , requiring point sources discharges to adopt BMPs so that any contribution to the chlorides/TDS would be minimized.

WAIVER OF REQUEST FOR HEARING

45. CITGO waives its right to a hearing on this Petition. An affidavit in support of this Petition is attached hereto as Exhibit H.

CONCLUSION

46. The hardship to CITGO of compliance with the schedule contained in the prior variance and the TDS water quality standard is substantial and there is no benefit to the public or the environment by compelling such compliance.

47. In conclusion, CITGO would request that the Board grant CITGO this Variance for a period of five years from the date of granting this Variance Petition on the conditions proposed herein.

WHEREFORE, CITGO requests that this Petition for Extension of Variance be granted.

CITGO PETROLEUM CORPORATION and
PDV MIDWEST REFINING, L.L.C.

By: _____
One of Its Attorneys

Dated: December 20, 2011

Jeffrey C. Fort
Ariel J. Tesher
SNR Denton US LLP
233 S. Wacker Drive
Suite 7800
Chicago, IL 60606-6404

CERTIFICATE OF SERVICE

The undersigned, an attorney, certifies that I have served upon the individuals named on the attached Notice of Filing true and correct copies of the **Petition for Extension of Variance** by First Class Mail, postage prepaid, on December 20, 2011.

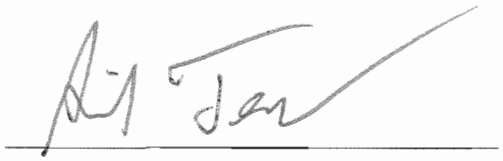

Exhibit A

ILLINOIS POLLUTION CONTROL BOARD
May 15, 2008

CITGO PETROLEUM CORPORATION and PDV MIDWEST REFINING, L.L.C.,	)	
Petitioners,	)	
v.	)	PCB 08-33
	)	(Variance – Water)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

OPINION AND ORDER OF THE BOARD (by T.E. Johnson):

On November 14, 2007, CITGO Petroleum Corporation (CITGO) and PDV Midwest Refining, L.L.C. (PDVMR) (petitioners) filed a petition to extend the variance issued by the Board in CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. v. IEPA, PCB 05-85 (Apr. 21, 2005). In PCB 05-85, the Board granted petitioners a variance from two of the Board's water quality standards for Total Dissolved Solids (TDS) (35 Ill. Adm. Code 302.208(g), 302.407). The temporary regulatory relief granted in 2005 applies to petitioners' oil refinery in Lemont (Lemont Refinery), which CITGO operates and PDVMR owns.

In this proceeding, PCB 08-33, respondent, the Illinois Environmental Protection Agency (IEPA), recommends that the Board grant the variance extension, subject to conditions proposed by IEPA. Petitioners have waived hearing, and no request for a hearing or objection to the variance extension has been filed. The Board finds that it may issue a final decision on the merits based on the current record, which by incorporation includes the record of PCB 05-85. The proposed variance extension would last for five years and continue to allow petitioners greater amounts of TDS in their wastewater discharge to the Chicago Sanitary and Ship Canal (S & S Canal), which leads to the Des Plaines River. The higher levels of TDS in petitioners' effluent come from air pollution control equipment that petitioners were required to install and use under a Consent Decree with the United States Environmental Protection Agency (USEPA), the State of Illinois, and several other states.

For the reasons set forth in this opinion, the Board finds that petitioners have proven that compliance with the TDS water quality standards at issue would impose an arbitrary or unreasonable hardship on petitioners. In addition, the Board finds that the requested variance extension is not inconsistent with federal law and may be issued without any significant impact on public health or the environment. The Board therefore grants petitioners the requested variance extension, subject to the conditions set forth in the order following this opinion. The variance relief begins today and lasts through May 15, 2013.

In this opinion, the Board first describes the legal framework for variances, followed by a general description of the PCB 05-85 proceeding. Next, the Board sets forth the procedural history of PCB 08-33. The Board then provides background on petitioners' facility, the Consent Decree, the air pollution control equipment, the S & S Canal and the Des Plaines River, and water sampling results. Next, the Board sets forth the TDS water quality standards from which petitioners seek continued relief: the TDS general use water quality standard and the TDS secondary contact water quality standard. The Board then discusses the requested variance extension and IEPA's recommendation, including the proposed compliance plans. Lastly, the Board makes its findings on hardship, environmental impact, consistency with federal law, and conditions for the variance extension.

LEGAL FRAMEWORK

A "variance is a temporary exemption from any specified rule, regulation, requirement or order of the Board." *See* 35 Ill. Adm. Code 104.200(a)(1). Under Title IX of the Environmental Protection Act (Act) (415 ILCS 5/35-38 (2006)), the Board is responsible for granting variances when a petitioner demonstrates that immediate compliance with the Board regulation would impose an "arbitrary or unreasonable hardship" on petitioner. *See* 415 ILCS 5/35(a) (2006).

The Board may grant a variance, however, only to the extent consistent with applicable federal law. *See* 415 ILCS 5/35(a) (2006). Further, the Board may issue a variance with or without conditions, and for only up to five years. *See* 415 ILCS 5/36(a) (2006). The Board may extend a variance from year to year if petitioner shows that it has made satisfactory progress toward compliance with the regulations from which it received the variance relief. *See* 415 ILCS 5/36(b) (2006). The Board has granted variance extensions for longer than a year. *See* The Ensign-Bickford Company v. IEPA, PCB 00-24 (Nov. 18, 1999); Village of North Aurora v. IEPA, PCB 95-42 (Apr. 20, 1995); City of Springfield v. IEPA, PCB 93-135 (Dec. 16, 1993); Dept. of the Army v. IEPA, PCB 92-107 (Oct. 1, 1992).

Specifically, as it relates to petitioners' request for a TDS water quality variance extension, the Act provides:

> To the extent consistent with applicable provisions of the Federal Water Pollution Control Act . . . and regulations pursuant thereto . . . :
>
> The Board may grant individual variances beyond the limitations prescribed in this Act, whenever it is found, upon presentation of adequate proof, that compliance with any rule or regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship. 415 ILCS 5/35(a) (2006); *see also* 35 Ill. Adm. Code 104.200, 104.208, 104.238.
>
> In granting a variance the Board may impose such conditions as the policies of this Act may require.
> * * *
> [A]ny variance granted pursuant to the provisions of this Section shall be granted for such period of time, not exceeding five years, as shall be specified by the

> Board at the time of the grant of such variance, and upon the condition that the person who receives such variance shall make such periodic progress reports as the Board shall specify. Such variance may be extended from year to year by affirmative action of the Board, but only if satisfactory progress has been shown. 415 ILCS 5/36(a), (b) (2006); *see also* 35 Ill. Adm. Code 104.200, 104.210, 104.242, 104.244.

The Act requires IEPA to provide public notice of a variance petition, including notice by publication in a newspaper of general circulation in the county where petitioner's facility is located. *See* 415 ILCS 5/37(a) (2006); 35 Ill. Adm. Code 104.214. The Board will hold a hearing on the variance petition (1) if petitioner requests a hearing, (2) if IEPA or any other person files a written objection to the variance within 21 days after the newspaper notice publication, together with a written request for hearing, or (3) if the Board, in its discretion, concludes that a hearing would be advisable. *See* 415 ILCS 5/37(a) (2006); 35 Ill. Adm. Code 104.224, 104.234.

The Act requires IEPA to appear at hearings on variance petitions (415 ILCS 5/4(f) (2006)) and to investigate each variance petition and "make a recommendation to the Board as to the disposition of the petition" (415 ILCS 5/37(a) (2006); 35 Ill. Adm. Code 104.216). The "burden of proof shall be on the petitioner." 415 ILCS 5/37(a) (2006); *see also* 35 Ill. Adm. Code 104.200(a)(1), 104.238(a). In a variance proceeding then, the burden is on the petitioner to prove that immediate compliance with Board regulations would cause an arbitrary or unreasonable hardship that outweighs public interest in compliance with the regulations. *See* Willowbrook Motel v. PCB, 135 Ill. App. 3d 343, 349-50, 481 N.E.2d 1032, 1036-1037 (1st Dist. 1985).

BACKGROUND ON PCB 05-85

In PCB 05-85, the Board granted CITGO and PDVMR a variance from the general use water quality standard for TDS of 1,000 milligrams per liter (mg/L) (35 Ill. Adm. Code 302.208(g)) and the secondary contact and indigenous aquatic life water quality standard for TDS of 1,500 mg/L (35 Ill. Adm. Code 302.407). By the terms of the Board's order, the variance relief lasts through December 15, 2009, and is subject to various conditions. Before granting the variance, the Board found that petitioners proved that compliance with the TDS water quality standards would impose an arbitrary or unreasonable hardship on petitioners, and that the requested variance is not inconsistent with federal law and may be issued without any significant impact on public health or the environment.

The variance allows petitioners greater amounts of TDS in their wastewater discharge to the S & S Canal, which leads to the Des Plaines River. The higher levels of TDS in petitioners' effluent come from air pollution control equipment that petitioners had to install and use under a Consent Decree with USEPA, Illinois, Louisiana, New Jersey, and Georgia. IEPA recommended that the Board grant the variance requested in PCB 05-85, which the Board did by order of April 21, 2005.

PROCEDURAL HISTORY OF PCB 08-33

Petition and Amended Petition

Petitioners filed their petition for variance extension on November 14, 2007, waiving hearing. On December 20, 2007, the Board issued an order identifying several informational deficiencies in the petition and directing petitioners to file an amended petition to provide the additional information. On January 22, 2008, petitioners filed an amended petition, setting forth only the changed portions of the original petition, as permitted by Board procedural rule. In a February 21, 2008 order, the Board found that with the amended petition, petitioners provided the information required by the Board's procedural rules for the contents of a petition for variance extension.[1]

Incorporation of PCB 05-85 Record

On January 22, 2008, petitioners filed a motion to incorporate the record of PCB 05-85 into this proceeding. On February 21, 2008, the Board granted the motion and directed the Clerk to place a copy of the PCB 05-85 record into the PCB 08-33 record. As the PCB 05-85 record forms a part of the PCB 08-33 record, the Board cites to the PCB 05-85 record throughout today's opinion and below provides an abbreviated procedural history of that case.

In PCB 08-85, petitioners filed their petition for variance on November 8, 2004, requesting a hearing. On February 7, 2005, IEPA filed its recommendation on the variance petition. This initial recommendation of IEPA was that the Board should deny the requested variance.[2]

Before hearing in PCB 05-85, petitioners filed the pre-filed testimony of two witnesses: Claude Harmon and James Huff. Petitioners included 15 exhibits associated with the pre-filed testimony. Harmon had been with CITGO as the Environmental Manager of the Lemont Refinery since 1994, and had been in the environmental field for 30 years. *See* Hearing Transcript at 17-18. Huff is a registered Professional Engineer and Vice President of Huff & Huff, Inc., an environmental consulting firm. At the time, Huff had been involved in over 30 environmental impact studies associated with wastewater discharge impacts on receiving streams over a 25-year period, including surveys of the S & S Canal and the Des Plaines River. Huff had worked with the Lemont Refinery for the past 22 years on various wastewater issues. Huff had been retained by petitioners to assist in evaluating alternatives for the wastewater stream to be generated by the new air pollution control equipment, identifying associated water quality impacts, preparing related permit applications, and providing technical support on the original variance petition. *See* Hearing Transcript at 29-32; Hearing Exhibit 8.

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[1] The Board cites the petition for variance extension as "Ext. Pet. at _" and the amended petition as "Ext. Am. Pet. at _."

[2] The Board cites the PCB 05-85 variance petition as "Pet. at _." The Board cites IEPA's February 7, 2005 recommendation in PCB 05-85 as "Agency Rec. at _."

Hearing Officer Bradley Halloran conducted the hearing on the PCB 05-85 variance petition in Chicago on February 24, 2005. At hearing, the pre-filed testimony of Harmon and Huff was entered into the record as if read, and petitioners' 15 exhibits were offered and admitted into the record, all without objection.[3] IEPA offered no testimony or exhibits at hearing. Counsel for IEPA stated on the record at the close of hearing that with petitioners' submission of testimony and exhibits, IEPA was prepared to support petitioners' request for variance. Tr. at 47-48. Petitioners filed their post-hearing brief on March 14, 2005. IEPA filed its post-hearing brief on March 15, 2005, in which IEPA recommended that the Board grant petitioners the requested variance.[4] As stated above, the Board granted the variance, subject to conditions, on April 21, 2005.

IEPA Notice and Recommendation

On December 26, 2007, IEPA filed a motion for extension of time to publish notice of the petition for variance extension in PCB 08-33. The Board granted IEPA's motion by order of January 10, 2008. On March 3, 2008, IEPA filed proof that the notice was published in the *Lemont Reporter/Metropolitan* on December 28, 2007, and February 1, 2008.

On March 10, 2008, IEPA filed a recommendation that the Board grant the requested variance extension, subject to the conditions of a compliance plan set forth in the recommendation.[5]

Statutory Decision Deadline

The 120-day statutory period for the Board to decide this case recommenced upon the filing of the amended petition for variance extension, making the decision deadline May 21, 2008. *See* 415 ILCS 5/38 (2006).

BACKGROUND

Overview

PDVMR owns and CITGO operates the Lemont Refinery, which is located at 135th Street and New Avenue in Lemont, Will County. Exh. 4 at 1; Exh. 11 at 1; Tr. at 13. Petitioners entered into a Consent Decree with USEPA and the States of Illinois, Louisiana, New Jersey, and Georgia to resolve alleged air quality violations at three refineries owned or operated by CITGO and related entities. Exh. 1; Exh. 4 at 1; Exh. 6 at 1; Tr. at 7, 20. The Consent Decree was

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[3] The Board cites the PCB 05-85 hearing transcript as "Tr. at _" and the hearing exhibits as "Exh. _ at _." The PCB 05-85 variance petition was admitted as a hearing exhibit, and is cited as either "Pet. at _" or "Exh. 4 at _."

[4] For the post-hearing briefs in PCB 05-85, the Board cites petitioners' brief as "Pet. Br. at _" and IEPA's brief as "Agency Br. at _."

[5] The Board cites IEPA's recommendation in PCB 08-33 as "Ext. Agency Rec. at _."

entered on January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3883. Ext. Agency Rec. at 5-6; Exh. 1 at 165; Tr. at 20; Pet. Br. at 2.

According to petitioners, under the Consent Decree, petitioners must reduce air emissions at the Lemont Refinery, a process that will contribute additional levels of TDS to the facility's treated wastewater. Tr. at 24; Exh. 4 at 1; Pet. Br. at 2. Petitioners maintain that, to comply with the Consent Decree, they must construct certain equipment and obtain air and water construction and operating permits from IEPA. Exh. 4 at 1; Exh. 3 (construction permit drawings). Petitioners state that they face significant stipulated penalties if they fail to comply with the Consent Decree schedule. Tr. at 10, 21; Exh. 2 (schedule); Pet. Br. at 4. Harmon testified in the prior proceeding that petitioners would be undertaking a "major construction project extending approximately 20 months." Tr. at 20-21; *see also* Pet. Br. at 2; Exh. 2.

The Lemont Refinery discharges its treated wastewater to the S & S Canal. Exh. 4 at 2. In December 2004, petitioners submitted to IEPA a construction permit application to install new wastewater treatment equipment. Agency Rec. at 8; Exh. 5 (application for wastewater construction permit); Tr. at 21-22. According to Harmon, IEPA advised petitioners that it could not issue a wastewater construction permit because of occasional water quality violations for TDS. Tr. at 22; Exh. 4 at 2; Exh. 5; Pet. Br. at 2, Exh. B.

Specifically, Harmon testified during the original proceeding that "two critical issues" raised by IEPA pose "challenges for the consent decree schedule." Tr. at 22; Pet. Br. at 2. First, IEPA would not grant the construction permit without also issuing a modified National Pollutant Discharge Elimination System (NPDES) permit. Second, because there had been an exceedence of the TDS standard in the past "in association with snow melt runoff, carrying road salt and similar compounds into streams," IEPA could not issue an NPDES permit for this project unless petitioners obtained a variance from the Board. Tr. at 22; Pet. Br. at 2-3. Huff likewise testified in the prior proceeding that "the Agency position that the addition of this wastewater stream would contribute to the existing TDS violations that periodically occur due to salt runoff from highway deicing activities leads to this variance request." Tr. at 40.

In PCB 05-85, petitioners maintained that the variance was needed because, with increased TDS discharge, there is a potential impact both in the S & S Canal and downstream at the Interstate 55 (I-55) bridge over the Des Plaines River. Exh. 4 at 2; Tr. at 24. Petitioners stated that their variance petition was filed soon after the Consent Decree was lodged. Pet. Br. at 3.

The Lemont Refinery

The Lemont Refinery was built during the period 1967 through 1970, and became operational in late fall 1969. Ext. Pet. at 4; Exh. 4 at 2. Approximately 25 different products are made at the Lemont Refinery, including gasolines, turbine fuels, diesel fuels, furnace oils, petroleum coke and various specialty napthas that can be manufactured into intermediate products such as antifreeze, dacron, detergent, industrial alcohols, plastics, and synthetic rubber. *Id.* Ninety percent of the Lemont Refinery's output goes toward making gasolines, diesel fuels, home heating oils, and turbine fuels for use in Illinois and throughout the Midwest. *Id.*

Currently, the Lemont Refinery produces 168,626 barrels daily on average and employs approximately 530 people. *Id.*

The Lemont Refinery draws water from the S & S Canal, and discharges into the Canal upstream of the Lockport Lock & Dam. Ext. Pet. at 4, 7; Exh. 4 at 2, 5. According to petitioners, the Refinery takes approximately 5.0 million gallons of water daily from the Canal, and discharges approximately 4.5 million gallons to the Canal—the difference constituting cooling tower evaporation and steam losses. Ext. Pet. at 4-5. The wastewater effluent contains dissolved solids derived from crude oil compounds that are removed at the Refinery, as well as concentrating the TDS present in the Canal intake water from the evaporation cooling. Ext. Pet. at 5; Exh. 4 at 3.

The Lemont Refinery operates under an NPDES permit (No. IL0001589), which was issued by IEPA. Ext. Pet. at 5, Exh. B; Ext. Agency Rec. at 8; Exh. 4 at 3; Exh 12; Agency Rec. at 8. The NPDES permit includes Outfall 001 at the Refinery at river mile 296.5 on the S & S Canal (latitude 41°38'58" and longitude 88°03'31"). Ext. Pet. at 5, Exh. B; Exh. 4 at 3. The NPDES permit was re-issued and modified by IEPA on June 22, 2007. Ext. Pet. at 5, Exh. B; Ext. Agency Rec. at 8. The permit does not have effluent limits on TDS, nor did the permit in effect at the time of the PCB 05-85 proceeding. Ext. Pet. at 5, Exh. B; Exh. 4 at 3. The NPDES permit contains a special condition 18, which provides:

> The permittee was granted a variance from the water quality standard for Total Dissolved Solids (TDS) for the discharge at outfall 001 in accordance with Illinois Pollution Control Board Order PCB 05-85. The permittee shall commence its study of downstream TDS concentrations in accordance with the schedule contained in this order. This permit may be modified to include any final limitations or monitoring requirements which may be necessary based on the results of the study, or future Illinois Pollution Control Board actions with result to Total Dissolved Solids water quality standards. This variance expires on December 15, 2009. Ext. Pet., Exh. B at 11.

The Lemont Refinery includes a physical/chemical and biological wastewater treatment plant, which performs primary, secondary, and tertiary treatment on the generated wastewater before it is discharged to the S & S Canal. Ext. Pet. at 5; Exh. 4 at 3-4. The Refinery has invested $45 million over the last ten years to upgrading the wastewater treatment system, including a purge treatment unit for scrubber discharge in 2007, discussed below. Ext. Pet. at 7.

Wet Gas Scrubber

Under the Consent Decree, petitioners installed a wet gas scrubber (WGS) in the Fluid Catalytic Converter Unit (FCCU) at the Lemont Refinery. Ext. Am. Pet. at 3. The wet gas scrubber is designed to reduce sulfur dioxide (SO_2) in air emissions from the FCCU. Ext. Am. Pet. at 3; Exh. 3; Exh. 4 at 5; Exh. 6 at 1; Tr. at 8, 20-21.

When the variance petition was filed in PCB 05-85, the Lemont Refinery projected that the wet gas scrubber would be complete and operational in August 2006. Ext. Am. Pet. at 3; Exh. 3; Exh. 4 at 12. However, according to petitioners:

> That schedule assumed that the Consent Decree [] schedule required the WGS to come on line either when a turnaround of the FCC unit was completed (then scheduled for later in 2006) or by December 2007. Further discussions resulted in the conclusion that December 2007 was the critical date under the Consent Decree. As a result, the schedule for the WGS as well as the increased discharge from the WGS to the Chicago Sanitary and Ship Canal were deferred. Ext. Am. Pet. at 3.

In October 2007, the wet gas scrubber began discharging. *Id.* The wet gas scrubber is "undergoing start up and optimization activities." *Id.*

Petitioners state that the SO_2 is "ultimately converted to sodium sulfate salts which are contained in a purge stream." Ext. Am. Pet. at 3. Huff had testified at the PCB 05-85 hearing that the wet gas scrubber discharge would "contain significant sodium sulfate, which essentially is the source of the TDS subject to the variance request." Tr. at 33. The purge stream is discharged to the Lemont Refinery's wastewater treatment system. The design specifications for the wet gas scrubber blowdown limit the exit temperature to 90°F before discharge to the basin. Ext. Am. Pet. at 3. "Other design features have been made to address nitrates and ammonia nitrogen levels and avoid the need for relief from any other regulation." *Id.*; *see also* Exh. 6 at 1; Tr. at 33. The preliminary estimates are that the wet gas scrubbing system would add 304,000 pounds per day of TDS to the Lemont Refinery's wastewater discharge, assuming all sodium salts. Petitioners are monitoring the discharge as "optimization continues for the new equipment." Ext. Am. Pet. at 3.

Estimated low-flow stream conditions (7-day, 10-year) are as follows: 1,134 million gallons per day (MGD) in the S & S Canal at the Lemont Refinery; and 1,260 MGD in the Des Plaines River at the I-55 bridge. Ext. Pet. at 7; Tr. at 38-39; Exh. 4 at 5; Exh. 6 at 3-4. At low flow, the incremental increase in TDS levels from the FCCU effluent after mixing is expected to be 32 mg/L in the S & S Canal and 29 mg/L in the Des Plaines River at the I-55 bridge. Ext. Pet. at 9. Petitioners state that "TDS probably would continue to exceed the existing water quality standard for the secondary contact waters to the I-55 Bridge during times of snow melt run-off." *Id.* Using the projected discharge loadings and 25% of the S & S Canal's low flow yields, petitioners estimate a 128 mg/L incremental increase in TDS water quality at the edge of the mixing zone. *Id.* at 9-10.

S & S Canal and Des Plaines River

Below the Lockport Lock & Dam, the S & S Canal merges with the Des Plaines River, passes through Joliet, and 11 miles downstream of Joliet passes beneath the I-55 bridge. Exh. 4 at 5; Exh. 6 at 1; Ext. Pet. at 7. Upstream of the I-55 bridge, the waters are designated as secondary contact waters. Downstream of the I-55 bridge, the Des Plaines River is a general use

water. The general use waters begin 18.5 miles downstream of petitioners' outfall. Tr. at 33; Exh. 4 at 5; Exh. 6 at 1; Ext. Pet. at 7.

TDS Data from the PCB 05-85 Proceeding

According to Huff, from 1998 to 2005, petitioners weekly sampled for TDS in their water intake from the S & S Canal, collected upstream of the Lemont Refinery's wastewater discharge. Tr. at 33-34; Exh. 6 at 3; Exh. 9. From 1998 to 2002, the mean TDS ranged from a low of 541 mg/L in 1998 to a high of 629 mg/L in 2001. Huff testified that the maximum TDS result (and the only exceedence of the 1,500 mg/L secondary contact TDS standard from 1998 to 2005 recorded by petitioners at the water intake) was 1,636 mg/L on March 8, 2002. Tr. at 34; Exh. 6, Table 1; Exh. 9.

The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) also had a weekly sampling program in 2001 and 2002. Tr. at 34; Exh. 6 at 3. The MWRDGC data is contained in Huff's report entitled *Impact of CITGO's Proposed Discharge on Water Quality* (December 2004), which was entered into the record at the PCB 05-85 hearing as Exhibit 6. Tr. at 34. At the first MWRDGC sampling site downstream of the Lemont Refinery, at Lockport, the average TDS for January 2001 through July 2002 was 626 mg/L. At the time of the PCB 05-85 proceeding, petitioners' average since 2001 was 599 mg/L and at the I-55 bridge, MWRDGC measured a mean TDS since 2001 of 705 mg/L. Exh. 6 at 3, 8-9.

Huff testified that at the Lockport Lock & Dam, downstream of the Lemont Refinery outfall, the MWRDGC recorded one TDS exceedence (1,595 mg/L), on January 4, 2001, adding that the Lemont Refinery recorded 1,408 mg/L TDS the next day. Tr. at 34. At the sampling station at Jefferson Street in Joliet, which is the next MWRDGC station downstream from the Lockport Lock & Dam, the MWRDGC recorded one TDS exceedence (1,535 mg/L), on February 24, 2000. *Id.* Further downstream at the Empress casino, one TDS exceedence (1,867 mg/L) was recorded, also on February 24, 2000. *Id.* At the I-55 bridge, where the general use water quality standard begins, the 1,000 mg/L TDS standard was exceeded on March 16, 2000 (1,902 mg/L), on January 25, 2001 (1,194 mg/L), on February 1, 2001 (1,075 mg/L), and on February 8, 2001 (1,139 mg/L). *Id.* at 34-35. The last three exceedences occurred over three consecutive sampling events, which Huff testified implies that the "TDS excursion was persistent for at least 15 days." *Id.* at 35.

According to Huff's testimony in the prior proceeding, there is a "strong correlation between the upstream TDS readings and the downstream TDS readings," which "is to be expected as TDS is considered a 'conservative' pollutant; that is, there is little or no reduction due to chemical or biological processes." Tr. at 36. Huff added that "the preponderance of flow at the I-55 Bridge originates from the Chicago area, so there [are] limited dilutional effects until further downstream." *Id.*

Huff testified at the PCB 05-85 hearing that a "review of all the TDS data (Exhibits 6 and 9) reveals that all of the elevated TDS readings occur in the winter, and are attributable to snowmelt runoff carrying salt runoff from highway deicing activities." Tr. at 35. Huff's report likewise concluded:

> The source of the elevated TDS in the waterway is from highway de-icing runoff. The significant tons of road salt that is applied in the drainage basin causes these TDS exceedances, independent of other activities. Exh. 6 at 5.

Because of deicing and snow melt run-off, petitioners maintained in PCB 05-85 that the TDS violations would occur with or without petitioners' current or future contribution of TDS. Exh. 4 at 6, 8; Tr. at 8. Petitioners stated that the compliance plan negotiated with IEPA for that proceeding would require petitioners to collect TDS data from the Des Plaines River at the I-55 bridge during winter months. Pet. Br. at 3. Huff testified that the proposed TDS data collection is "extensive." Tr. at 40. According to petitioners, this data would "provide information that the Agency might not otherwise have the funding to undertake and could lead to better understanding of the snowmelt phenomenon and perhaps yield ideas on how to reduce that impact." Tr. at 12.

Harmon testified in the original proceeding that after two seasons of TDS testing, the Lemont Refinery would "be able to size the required holding tank or basin for the wet gas scrubber discharge during periods of high salinity." Tr. at 25, 40-41; Pet. Br. at 3. According to Harmon, the retention system project would begin by March 1, 2009, and "would be completed by the winter season beginning December 1, 2009." Tr. at 25, 41; Pet. Br. at 3.

TDS Data Since the PCB 05-85 Proceeding

Petitioners represent that they have conducted the TDS water quality sampling required by the conditions of the current variance. Ext. Am. Pet. at 4. Those data "continue to show elevated TDS and chloride levels during periods of snow-melt conditions." *Id.* Samples were collected upstream of the Lemont Refinery in the S & S canal (Exh. C), at the I-55 bridge *before* the wet gas scrubber discharge began (Exh. D), and at the I-55 bridge *after* the wet gas scrubber discharge began (Exh. E). *Id.*

The two TDS results in the S & S Canal greater than 1,500 mg/L were from the Lemont Refinery water intake, *i.e.*, upstream of the Refinery discharge: 1,656 mg/L on January 29, 2007; and 1,520 mg/L on February 26, 2007. Ext. Pet. at 8, Exh. C. The highest recent TDS result at the I-55 bridge, *i.e.*, downstream of the Refinery discharge, was 1,300 mg/L, in samples collected on February 28, 2007 (before the WGS discharge began), and December 12, 17, 26, and 28, 2007 (after the WGS discharge began). Ext. Pet. at 8, Exh. D; Ext. Am. Pet. at 4, Exh. E.

Based on these data, petitioners conclude:

> there is no relationship between the discharges from the Refinery and the water quality conditions relating to TDS, either for the conditions upstream of the Refinery intake, or for the conditions at the I-55 Bridge. The recent data does not indicate an exceedance of the applicable water quality standards at the I-55 Bridge. The highest levels recently recorded was 1,300 ppm, below both the 1,500 mg/l standard for secondary contact waters upstream of the bridge and the 1,686 mg/l seasonal standard for general use waters downstream of the bridge. *Id.*

APPLICABLE REGULATIONS

Petitioners seek a variance from TDS water quality standards at 35 Ill. Adm. Code 302.208(g) and 302.407. Part 302 sets forth water quality standards applicable throughout the State as designated in 35 Ill. Adm. Code 303. *See* 35 Ill. Adm. Code 302.101(a).

Subpart B of Part 302, which contains Section 302.208(g), sets forth general use water quality standards that must be met in waters of the State for which there is no specific designation. *See* 35 Ill. Adm. Code 302.101(b); *see also* 35 Ill. Adm. Code 303.201 ("general use waters"). Section 302.208(g) provides a general use water quality standard for TDS of 1,000 mg/L. Petitioners seek variance relief from this standard for the Des Plaines River. Section 302.208(g) reads in relevant part:

Section 302.208 Numeric Standards for Chemical Constituents

g) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.

Constituent	Unit	STORET Number	Standard
Total Dissolved Solids	mg/L	70300	1000

35 Ill. Adm. Code 302.208(g).

Subpart D of Part 302, which contains Section 302.407, sets forth the secondary contact and indigenous aquatic life water quality standards. *See* 35 Ill. Adm. Code 302.201(d). Section 302.407 provides a TDS standard of 1,500 mg/L. Petitioners seek variance relief from this standard regarding the S & S Canal. The S & S Canal is designated among Illinois' secondary contact and indigenous aquatic life waters, as is the Des Plaines River "from its confluence with the Chicago Sanitary and Shipping Canal to the Interstate 55 bridge." *See* 35 Ill. Adm. Code 303.441(a), (i). The provision from which petitioners seek relief, Section 302.407, reads in pertinent part:

Section 302.407 Chemical Constituents

Concentrations of other chemical constituents shall not exceed the following standards:

CONSTITUENTS	STORET NUMBER	CONCENTRATION (mg/L)
Total Dissolved Solids	70300	1500

35 Ill. Adm. Code 302.407.

In a recent site-specific rulemaking, discussed further below, the Board adopted site-specific TDS water quality standards at 35 Ill. Adm. Code 303.445:

> Section 303.445 Total Dissolved Solids Water Quality Standard for the Lower Des Plaines River
>
> a) Beginning November 1 and continuing through April 30 of each year, the total dissolved solids (TDS) water quality standard for Secondary Contact and Indigenous Aquatic Life Use waters in 35 Ill. Adm. Code 302.407 does not apply to the portion of the Des Plaines River from the ExxonMobil refinery wastewater treatment plant discharge point located at Interstate 55 and Arsenal Road (said point being located in Will County, T34N, R9E, S15, Latitude: 41°, 25', 20" North, Longitude: 88°, 11', 20" West) and continuing to the Interstate 55 bridge. TDS levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L.
>
> b) Beginning November 1 and continuing through April 30 of each year, the TDS water quality standard for General Use Waters in 35 Ill. Adm. Code 302.208 does not apply to the Des Plaines River from the Interstate 55 bridge to the confluence of the Des Plaines River with the Kankakee River. TDS levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L. 35 Ill. Adm. Code 303.445.

Petitioners do not seek relief from Section 303.445, which became effective on February 27, 2007.

DISCUSSION

The Requested Variance Extension

Petitioners now seek to extend the PCB 05-85 variance relief for five years, as well as modify a number of internal dates within the conditions of the variance. Petitioners have waived hearing. Ext. Pet. at 14. The petition and the amended petition are each supported by the

affidavit of Brigitte Postel, who has worked at the Lemont Refinery since October 2003 and held the position of Environmental Engineer, Water Coordinator.

Petitioners represent that they have "undertaken the activities required by the prior variance" (Ext. Pet. at 2) such that the "the conditions of the prior variance have been fully met" (Ext. Am. Pet. at 1-2, quoting 35 Ill. Adm. Code 104.210(d)(2)). In light of the data collected and the regulatory developments discussed below, petitioners seek to extend the dates of the current variance "to avoid unnecessary activities." Ext. Pet. at 4.

Regulatory Developments Since the 2005 Variance

According to petitioners, since the variance was granted in April 2005, "several material facts have changed" that warrant the extension. Ext. Pet. at 2.

R06-24 ExxonMobil Site-Specific. First, petitioners note the effect of the concluded site-specific rulemaking, Revisions to Water Quality Standards for Total Dissolved Solids in the Lower Des Plaines River for ExxonMobil Oil Corporation: Proposed 35 Ill. Adm. Code 303.445, R06-24 (R06-24 Site-Specific). Ext. Pet. at 2, 7. On February 15, 2007, the Board in R06-24 Site-Specific increased to 1,686 mg/L the TDS secondary contact and general use water quality standards for certain waters during the months of November through April of each year. Specifically, the site specific rule applies in the Des Plaines River from the ExxonMobil refinery wastewater treatment plant discharge point located at I-55 and Arsenal Road (downstream of the Lemont Refinery discharge) and continuing to the I-55 bridge, and in the Des Plaines River from the I-55 bridge to the confluence of the Des Plaines River with the Kankakee River. *See* R06-24 Site-Specific, slip op. at 8 (Feb. 15, 2007) (adding 35 Ill. Adm. Code 303.445).

According to petitioners, had this site-specific rule been in effect when petitioners filed for the original variance relief in 2004, "one of the two places where the TDS standard had been exceeded would not have been a violation." Ext. Pet. at 2. Further, petitioners note:

> Adding in the Exxon-Mobil increased discharge, in combination with the increased CITGO discharge, the maximum additional TDS levels at the I-55 bridge was projected to be 72 mg/l. *See* Petition, ¶26 in R06-24 (February 7, 2006). But the data shows that the maximum TDS levels in December 2007 were the same as recorded before the WGS discharge began. The difference between the observed sampling information for TDS and the applicable water quality standard today (even before the Board takes final action in R 07-09) is so large that it does not appear likely that the General Use water quality standard as adopted for the Des Plain[e]s River downstream of the I-55 Bridge in the proceeding initiated by ExxonMobil will be a relevant factor. Ext. Am. Pet. at 4.

R07-9 Triennial. Second, in a pending rulemaking, Triennial Review of Sulfate and Total Dissolved Solids Water Quality Standards: Proposed Amendments to 35 Ill. Adm. Code 302.102(b)(6), 302.102(b)(8), 302.102(b)(10), 302.208(g), 309.103(c)(3), 405.109(b)(2)(A), 409.109(b)(2)(B), 406.100(d); Repealer of 35 Ill. Adm. Code 406.203 and Part 407; and Proposed New 35 Ill. Adm. Code 302.208(h), R07-9 (R07-9 Triennial), the Board proposed first-

notice amendments on Sept. 20, 2007, that would eliminate the TDS general use water quality standard. Ext. Pet. at 2, 7. "Of course," continue petitioners, if the Board removes the TDS standard for all general use waters, "sampling at the I-55 Bridge will not be relevant." Ext. Am. Pet. at 4. On May 1, 2008, the Board issued an order in R07-9 Triennial proposing for public comment proposed second-notice amendments that retained the elimination of the TDS general use water quality standard. *See* R07-9 Triennial, slip op. at 22 (May 1, 2008).

Further, the Board stated at first notice in R07-9 Triennial:

> While the Board declines to eliminate TDS standard for secondary contact waters, the Board recognizes that CITGO may face some hardship if TDS standard for secondary contact waters is not resolved in a timely manner. Specifically, CITGO may have to expend funds on designing wastewater storage system for wastewater from refinery's wet gas scrubber in order to comply with CITGO's variance conditions [PCB 05-85]. In this regard, the Board believes that CITGO has a number of options CITGO can pursue to avoid undertaking any exercise that may be unnecessary in the future, including seeking an extension of the current variance with amended conditions. R07-9 Triennial, slip op. at 30 (Sept. 20, 2007).

R08-9 CAWS/LDPR. In another pending rulemaking, Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and the Lower Des Plaines River: Proposed Amendments to 35 Ill. Adm. Code 301, 302, 303 and 304, R08-9, IEPA "has proposed to remove the TDS standard in the Canal." Pet. at 2. On April 24, 2008, the Board concluded its tenth day of hearing in R08-9, which has not been to first notice. Additional hearings are expected to be held in the summer and fall of 2008.

Petitioners' Proposed Variance Extension Language

Petitioners ask that "the focus be moved to the conditions in the Ship Canal upstream of the Refinery, where occasional exceedances of the existing TDS standard exist." Ext. Am. Pet. at 5. Specifically, petitioners propose the following revisions to the Board's April 21, 2005 order:

> The Board grants CITGO and PDVMR a variance from the TDS water quality standards of 35 Ill. Adm. Code 302.208(g) and 302.407, subject to the following conditions:
>
> 1. The duration of the variance relief from the identified TDS water quality standards is from ~~April 21, 2005~~ [date of Board order] through December 15, ~~2009~~ 2012. This variance modifies and extends certain conditions of the variance in PCB 05-85, entered April 21, 2005.
>
> 2. This variance applies only to petitioners' Lemont Refinery at 135th Street and New Avenue in Lemont, Will County, regarding elevated TDS levels in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent

Decree entered January 26, 2005, in the United States District Court for the Southern District of Texas, Case No. H-04-3883.

3. ~~By October 1, 2006, p~~Petitioners must identify a location near the I-55 Bridge for collecting water samples from the Des Plaines River and secure access for the sampling. ~~By November 1, 2006, p~~Petitioners must retain a contractor to collect TDS samples at that location. ~~From December 1, 2006 through~~ Until March 30, 2008, petitioners must collect TDS samples from the Des Plaines River three times per week during the winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to the Agency.

4. ~~From December 1, 2006 through~~ Until March 30, 2008, the effluent of Outfall 001 must be monitored for TDS two times per week during the winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to the Agency.

5. Petitioners must diligently attempt to identify any relationship between TDS levels in the effluent of Outfall 001 and TDS levels in the Des Plaines River at the I-55 Bridge. Petitioners must use any resulting relevant information to identify the time period that may be needed to hold the FCCU [Fluid Catalytic Converter Unit] wet gas scrubber bleed.

6. By May 1, ~~2008~~ 2011, petitioners must begin to size the system needed to retain the FCCU wet gas scrubber bleed for the maximum number of days that the TDS level in the ~~Des Plaines River at the I-55 Bridge exceeds 1,000 mg/L~~ Chicago Sanitary and Ship Canal exceeds the applicable water quality standard for TDS.

7. By June 1, ~~2008~~ 2011, petitioners must begin to design the system needed to retain the FCCU wet gas scrubber bleed for the maximum number of days that the TDS level in the ~~Des Plaines River at the I-55 Bridge exceeds 1,000 mg/L~~ Chicago Sanitary and Ship Canal exceeds the applicable water quality standard for TDS.

8. By December 1, ~~2008~~ 2011, if needed to meet an applicable water quality standard for TDS, petitioners must submit to the Agency a wastewater construction permit application for the FCCU wet gas scrubber bleed retention system.

9. By March 1, ~~2009~~ 2012, if needed to meet an applicable water quality standard for TDS, petitioners must begin construction as needed on the FCCU wet gas scrubber bleed retention system.

10. By December 1, 2012, if needed to meet an applicable water quality standard for TDS, petitioners must operate the FCCU wet gas scrubber bleed retention system as needed. From December 1, ~~2009~~ 2012 through March 30, ~~2010~~ 2013, if such system is necessary, petitioners must collect TDS samples from the ~~Des Plaines~~

~~River at the I-55 Bridge~~ Chicago Sanitary and Ship Canal five days per week (excluding weekends and holidays). Petitioners must submit the TDS sample results monthly to the Agency. *See* Ext. Pet. at 3-4; *see also* CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. v. IEPA, PCB 05-85, slip op. at 16-17 (Apr. 21, 2005).

These amendments, according to petitioners, will provide a five-year variance that "has the effect of moving the prior schedule back 3 years." Ext. Am. Pet. at 2. Moreover, petitioners state that:

> If the Board removes the existing water quality standard for TDS in the Ship Canal, this variance will become moot according to its terms, and not require further action by the Board. Ext. Pet. at 4.

Agency Recommendation

IEPA recommends that the Board grant petitioners' requested variance extension for five years from the date of the Board's order, subject to compliance plan conditions set forth by IEPA in its recommendation. Ext. Agency Rec. at 1, 4, 8.

IEPA notes that petitioners' petition includes a proposed compliance plan. Ext. Agency Rec. at 5. However, since the petition was filed, IEPA and petitioners "have been in discussions regarding the nature of the relief." *Id.* It is "[b]ased on these discussions" that IEPA "proposes the following modifications to CITGO's compliance plan":

> The Board grants CITGO and PDVMR a variance from the TDS water quality standards of 35 Ill. Adm. Code 302.208(g) and 302.407, subject to the following conditions:
>
> 1. The duration of the variance relief from the identified TDS water quality standards is for five years from the date of the Board order. This variance modifies and extends the variance relief granted in PCB 05-85, entered April 21, 2005.
>
> 2. This variance applies only to Petitioner's Lemont Refinery at 135 th Street and New Avenue in Lemont, Will County, regarding TDS concentrations in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent Order Decree entered January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3833.
>
> 3. Until the U.S. EPA approves the elimination of the General Use water standard for TDS, Petitioner will monitor and collect samples from the Des Plaines River near I-55 Bridge three times per week, during the winter months (December I to March 30), and analyze for TDS. Petitioner must submit the TDS sample results monthly to the Agency.

4. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner will monitor its water intake from the Chicago Sanitary & Ship Canal two times per week, during the winter months (December 1 to March 30) for TDS. Petitioner must submit the TDS sample results monthly to the Agency.

5. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner must monitor TDS in the effluent from Outfall 001 two times per week, during winter months (December 1 to March 30). Petitioner must submit the TDS effluent sample results monthly to the Agency.

6. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner will diligently attempt to identify any relationship between the TDS levels in the effluent from Outfall 001, and the water quality samples required to be collected pursuant to paragraphs 3, 4, and 5 of this Order. To the extent there is a correlation between effluent TDS concentration and any exceedance of an applicable water quality standard for TDS, Petitioner shall determine the time period that the water from the FCCU wet gas scrubber bleed may require additional management or treatment, including but not limited to holding, treatment, or alternative disposal.

7. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 45 months from the date of the Board order, Petitioner must prepare a TDS water quality management plan to address any contribution from the FCCU wet gas scrubber bleed as determined by the analyses performed pursuant to paragraph 6. Elements to be considered in developing this plan shall include a system to retain, treat, or dispose of the FCCU wet gas scrubber bleed or any other approach to eliminate wet gas scrubber bleed from Outfall 001 during periods when applicable TDS water quality standards are exceeded. Options to be considered may include holding tanks, deep well disposal, crystallization, and any other technology or management strategy identified.

8. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 46 months from the date of the Board order, Petitioner must design the TDS water quality management plan for the conditions identified in paragraph 7.

9. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 48 months from the date of the Board order, Petitioner must submit to the Agency a wastewater construction permit application for any elements of the TDS

water quality management plan for which permits or amended permits are required.

10. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 54 months from the date of the Board order, Petitioner must begin construction as needed for an FCCU wet gas scrubber bleed control system and/or implement the TDS water quality management plan.

11. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 60 months from the date of the Board order, Petitioner must operate any equipment required to be constructed by the TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber identified in paragraph 2 of this Order. *Id.* at 5-7.

Hardship

In considering a variance request, the Board is required by Section 35(a) of the Act to determine whether the petitioner has presented adequate proof that it would suffer an arbitrary or unreasonable hardship if required to immediately comply with the Board's regulation at issue. *See* 415 ILCS 5/35(a) (2006).

Petitioners state that their request for variance extension is necessitated by the Consent Decree, to which IEPA is a party. Ext. Pet. at 11; Exh. 4 at 9. USEPA lodged the Consent Decree, explains petitioners, to "substantially reduce emissions of [SO_2], nitrogen oxides [NO_X] and Particulate Matter [PM]." *Id.* Petitioners agreed to the reductions and are investing over $140 million at the Lemont Refinery, "most of which costs are for the very wet gas scrubber which generates the TDS" at issue in the variance extension request. Ext. Pet. at 11. Petitioners state that they are subject to "substantial penalties" if they do not meet the Consent Decree schedule. Pet. Br. at 4.

At the time of the original variance request, petitioners stated that the wet gas scrubber would increase the amount of TDS in the Lemont Refinery's treated wastewater. Pet. Br. at 4; Exh. 6 at 1; Tr. at 21, 33, 38-39; *see also* Exh. 5, 11. Petitioners maintain that their contribution of TDS is "readily within the assimilative capacity of the waterway," and that there is no TDS water quality violation in the Canal "except in association with snow melt conditions." Ext. Pet. at 11-12; *see also* Exh. 4 at 9. Petitioners add:

> And since the adoption of the modified TDS standard in the Lower Des Plaines River, as requested by Exxon-Mobil, there is no longer a violation of the modified TDS standard for that General Use body of water. Ext. Pet. at 12.

Petitioners investigated methods to avoid releasing the FCCU wastewater into the existing wastewater treatment system, including a managed release program with the use of a

storm water basin for retention; deep well disposal; and installation of evaporation wastewater treatment technology. Petitioners maintain that none of these alternatives is practical. Ext. Pet. at 12-14; Exh. 4 at 10, 12-13; Pet. Br. at 4. Petitioners also investigated "sewering the discharge . . . to the [MWRDGC]," but the MWRDGC informed petitioners that it "did not have the capacity to handle the discharge." Tr. at 10. IEPA does not take issue with any of petitioners' conclusions regarding the viability of alternative technologies.

Further, regarding the investigated alternatives, Harmon testified at the PCB 05-85 hearing that the storm water basin at the Lemont Refinery is used to collect site storm water runoff and drainage from naturally existing waterways. Tr. at 25; Pet. Br. at 4. According to Harmon, because of residential developments near the northwest facility boundary, there was a marked increase in storm water volume in the site's storm water basin. Tr. at 25; Pet. Br. at 4. Runoff from the developments feeds into naturally existing waterways that terminate within boundaries of the Lemont Refinery and ends up in the site's storm water basin. Tr. at 25; Pet. Br. at 4-5. Harmon explained that a special condition in an Agency-issued "Groundwater Management Zone Approval Letter" requires that the basin's water level be maintained below 12'9". According to Harmon, it has been difficult to comply with this condition because of the additional volume of storm water runoff from the residential developments. Tr. at 26; Pet. Br. at 5.

Under these circumstances, retaining the wet gas scrubber effluent in the storm water basin during periods of snowmelt and deicing is not viable, Harmon testified. Tr. at 26; Pet. Br. at 5. However, strategies to divert the residential runoff before it crosses the Lemont Refinery border were being pursued. Harmon testified that if such a diversion is implemented, the site's storm water basin may be able to retain wet gas scrubber effluent during snowmelt conditions. Tr. at 26.

Deep well disposal of the scrubber effluent, according to petitioners, is also not a viable alternative because it would constitute a Class I injection well, which wells are not "permittable" in northeastern Illinois because no cap rock exists over the depth where disposal wells are drilled. Ext. Pet. at 12; Pet. Br. at 5. Huff testified that "Class I wells require injection beneath a cap rock that will prevent migration upwards into higher aquifers" and northeastern Illinois "does not have a cap rock above the Mount Simon formation used for disposal wells throughout the Midwest." Tr. at 39; *see also* Pet. Br. at 5; Exh. 4 at 10; Exh. 13.

Petitioners also state that technologies for removing sodium sulfate from a dilute aqueous stream are limited: electrodialysis has not been applied in the chemical or refinery industries on this scale; biological sulfate reduction will not reduce the overall TDS concentration by simply replacing the sulfate ions with carbonate ions; and reverse osmosis concentration is limited because scaling problems would develop given the high concentration of sodium sulfate. Ext. Pet. at 13; Exh. 4 at 10; Pet. Br. at 5.

Petitioners maintain that the only alternative technology potentially available would be evaporation, which they describe as an energy intensive approach that would result in increased carbon dioxide emissions to the atmosphere. Ext. Pet. at 13; Pet. Br. at 5-6.; Exh. 4 at 10-11, Attachment A; Tr. at 40. According to petitioners, this alternative "would result in substantial

adverse affects on the environment in the form of increased emissions to evaporate the wastewater." Exh. 4 at 13. Additionally, in 2004 dollars, the capital cost for applying a falling film evaporator with mechanical vapor recompression to this wastewater stream is approximately $7 million. Operating costs are estimated at $1 million per year, including depreciation. Ext. Pet. at 13; Exh. 4 at 11; Pet. Br. at 6; Exh. 14 (evaporation costs). Huff testified that over the years, TDS variance "requests consistently have found evaporation technology cost- and energy-prohibitive." Tr. at 40.

Petitioners are unaware of any such massive evaporation project being built or operated, and conclude that requiring it here for the wet gas scrubber discharge would impose on them an arbitrary and unreasonable hardship:

> CITGO is not the cause of any current water quality standard exceedance; upstream conditions in the Ship Canal from snow melt conditions exceed the existing TDS standard, and the Agency has asked the Board to remove that standard as well. Further, CITGO is investing substantial monies in the Refinery to substantially reduce air emissions and substantially reducing the overall environmental releases from the Refinery, and the wastewater discharge involved is relatively modest. Ext. Pet. at 14; *see also* Exh. 4 at 12; Tr. at 35-36; Pet. Br. at 6.

During the original proceeding, Huff testified that TDS effluent limits are not proposed as a condition of the variance because "it is clear that the TDS water quality violations are due solely to salt runoff from highway deicing activities." Tr. at 43. Huff added that "the Lemont Refinery will have no control over the TDS concentrations, so the only possibility to control the pounds per day discharged is by limiting the discharge rate." *Id.* at 45. Limiting the discharge rate would require the Refinery to hold treated effluent, and presumably cease all discharge if the Des Plaines River TDS is greater than 1,000 mg/L, according to Huff. *Id.* Huff testified that today there is no storage capacity at the Lemont Refinery to accomplish this:

> [T]hese [TDS water quality] violations appear to occur over 15 consecutive days, but less than 22 days. The Lemont Refinery will have to come up with in excess of 4,000,000 gallons of capacity to isolate the wet gas scrubber during these periods of elevated TDS levels at the I-55 Bridge. Currently, this excess capacity does not exist, and the actual number of days that would require holding wet gas scrubber water currently is poorly understood. The requested compliance time frame is for the collection of the necessary data to properly size this holding basin/tankage. *Id.* at 45-46.

After reviewing the data collected at the I-55 bridge since the issuance of the 2005 variance, petitioners concede that it appears "the extent of elevated TDS levels may be longer than previously thought -- the 2006-07 winter alone produced elevated TDS levels over a three week long stretch." Ext. Am. Pet. at 5, Exh. D. Though these levels continue to be "due to snowmelt conditions," the existing variance condition "assumes that storage could occur for a long enough time so that the Refinery could avoid discharging during these events." *Id.* It is now apparent, however, that the length of time and the volume of water required is greater than

anticipated when the PCB 05-85 compliance plan was proposed. *Id.* Based on the data available at the time of the prior proceeding, which was from MWRDGC, petitioners "did not expect the duration of elevated TDS levels to last for such a long period of time." *Id.*

Petitioners believe that the TDS standards will be eliminated and that measures such as wastewater storage will not be required. Ext. Am. Pet. at 5. As the Lemont Refinery's maximum permitted discharge is 5.79 MGD:

> the quantity of tankage needed to store that volume of wastewater would be substantial (perhaps 100 million gallons for a 20-day period, assuming this period of time is a worst case scenario). However, at the present time, CITGO is not asking for a change in the final compliance measures - should any such measures be required. If the continued monitoring of the Ship Canal (as suggested by this Petition) continues to indicate that elevated TDS levels last for a couple of weeks at a time, and if the Board does not remove the TDS standard in the Ship Canal, CITGO may seek further relief from the Board - including a change to the existing compliance plan. *Id.* at 5-6.

Complying with the schedule in the existing variance and the TDS water quality standard is "substantial and there is no benefit to the public or the environment by compelling such compliance," according to petitioners. Ext. Pet. at 14. Petitioners conclude:

> Indeed, there does not appear to be any practical compliance alternative at this time. Even if there is an alternative, such would result in substantial adverse affects on the environment in the form of increased emissions to evaporate the wastewater. *Id.*

IEPA maintains that as "all the underlying facts are identical to the ones that were considered by the Board in PCB 05-85," the Board's 2005 finding, that petitioners would suffer an arbitrary or unreasonable hardship if required to comply immediately with the regulations at issue, also applies in this case. Ext. Agency Rec. at 4-5.

Environmental Impact

When deciding to grant or deny a variance petition, the Board is required to balance the petitioner's hardship in complying with Board regulations against the impact that the requested variance will have on the environment. *See* Monsanto Co. v. PCB, 67 Ill. 2d 276, 292, 367 N.E.2d 684, 691 (1977). Petitioner must establish that the hardship it would face from denial of its variance request would outweigh any injury to the public or the environment from granting the relief, and "[o]nly if the hardship outweighs the injury does the evidence rise to the level of an arbitrary or unreasonable hardship." Marathon Oil. Co. v. EPA, 242 Ill. App. 3d 200, 206, 610 N.E. 2d 789, 793 (5th Dist. 1993).

Petitioners state that there would be no cognizable benefit to the public or the environment in making them comply with the existing TDS water quality standards. Pet. Br. at 7. Huff testified in the original proceeding that because TDS is composed of a variety of anions

and cations, "there are no 'toxicity' values that can be applied to the generic TDS parameter." Tr. at 36. Petitioners emphasize that the Board has proposed eliminating the TDS general use water quality standard in R07-9 Triennial. Ext. Pet. at 12; *see also* Exh. 4 at 9; Tr. at 37; Pet. Br. at 7; Exh. 10. Petitioners expect that the proposed rule for TDS in secondary contact waters would be "no more stringent than for the General Use waters" and that accordingly "there would be no reason to store wastewater before discharging." Ext. Pet. at 12. Moreover, add petitioners:

> with the change in the water quality standards downstream, the point to assess the water quality conditions now would be the Canal, rather than at the I-55 Bridge on the Lower Des Plaines River. *Id.*

Petitioners state, and IEPA does not dispute, that neither the S & S Canal nor the downstream Des Plaines River has been listed by IEPA as impaired for TDS. Ext. Pet. at 10; Exh. 4 at 7, 10. Huff testified that "sodium sulfate, at the proposed levels discharged, will not impact the aquatic community in the Chicago Sanitary and Ship Canal or in the Des Plaines River" and that there is "no adverse effect on aquatic life due to TDS and sulfate levels." Tr. at 37-38. Petitioners maintain that there would be no "significant injury to the public or the environment" from the requested variance. Pet. Br. at 7; Tr. at 37-38.

On the other hand, according to petitioners, their $140 million investment in the Lemont Refinery under the Consent Decree is projected to "reduce SO_2 emissions by 15,300 tons/year, NO_X emissions by 1,100 tons/year, and PM emissions by 92 tons/year." Ext. Pet. at 11, 14; *see also* Exh. 4 at 9; Exh. 1; Tr. at 20.

IEPA states that nothing has changed to alter the Board's finding from PCB 05-85 that the hardship petitioners would experience outweighs any injury to the public or the environment from granting the relief. Ext. Agency Rec. at 5.

Consistency with Federal Law

Under Section 35 of the Act (415 ILCS 5/35 (2006)), the Board may grant a variance only to the extent that doing so is consistent with applicable provisions of federal law. In PCB 05-85, IEPA concluded that granting the requested variance would not be inconsistent with the Clean Water Act or any other federal standard. Agency Rec. at 7; Agency Br. at 2. In this proceeding for an extension of the variance relief, IEPA maintains that petitioners have again satisfied this requirement. Ext. Agency Rec. at 7.

Board Findings and Conditions

The Board has balanced the hardship petitioners would face in immediately complying with the TDS water quality standards against the impact that granting the requested variance extension would have on the public and the environment, all as described in detail above. Based on this record, and considering the conditions to which the variance extension would be subject, the Board finds that petitioners have established that the hardship they would experience outweighs any injury to the public or the environment from granting the relief.

The Board finds that petitioners have presented adequate proof that they would suffer an arbitrary or unreasonable hardship if required to comply immediately with the Board regulations at issue. Additionally, the Board finds that petitioners have made satisfactory progress toward compliance, including reporting the TDS results of samples collected at the I-55 bridge. Ext. Pet. at 7-8, 10-11, Exh. D; Ext. Am. Pet. at 3-5, Exh. E. The Board further finds that the variance extension is not inconsistent with federal law.

The Board grants petitioner's requested extension of variance, subject to the IEPA-proposed conditions, as supplemented below. Section 36(a) of the Act (415 ILCS 5/36(a) (2006)) provides that "[i]n granting a variance the Board may impose such conditions as the policies of this Act may require." The conditions set forth as a compliance plan in IEPA's recommendation were proposed in response to petitioners' proposed compliance plan and were based on discussions between IEPA and petitioners. IEPA's proposed plan differs from petitioners' in several respects.

Petitioners' proposal calls for both the sampling in the Des Plaines River near the I-55 bridge and the monitoring of the Outfall 001 effluent to terminate on March 30, 2008. IEPA proposes, in contrast, that petitioners (1) continue this in-stream sampling until USEPA approves elimination of the TDS general use water quality standard, and (2) continue the effluent sampling until USEPA approves elimination of the TDS water quality standard for the S & S Canal. In addition, IEPA proposes that petitioners monitor their water intake from the Canal for TDS, which petitioners have done in the past (*see* Ext. Pet., Exh. C) but have not proposed as a variance condition. The Board finds these conditions appropriate. The wet gas scrubber is relatively new equipment. It only began discharging in October 2007 and is still undergoing start up and optimization activities. The additional condition for intake monitoring will help to provide a more complete data picture in assessing any impact from TDS levels in the effluent.

Additionally, unlike petitioners' plan, the IEPA-proposed conditions do not mandate that the future control measure must be a retention system. Under either compliance plan, activities to control FCCU wet gas scrubber bleed contributing to TDS water quality standard exceedences would not be required until several years into the term of the variance extension. As noted, the 2005 variance contemplated that data collected under its terms would shed light on the scope of any retention system eventually built. Based on the recent data collection, petitioners raise uncertainties about the practicality of the WGS bleed retention system's volume.

Under the conditions proposed by IEPA for the variance extension, more TDS data will be collected, as discussed above. That data must be considered to identify any correlation between effluent TDS concentration and water quality exceedences and, as needed, to determine the proper response with respect to the FCCU wet gas scrubber bleed. Under these circumstances, the Board declines to provide now that the control measure to be instituted in 2012-13, if any, must necessarily be the retention system. Rather, the Board finds that this record supports preserving greater flexibility for the consideration of control options that may be viable later. Unless USEPA has approved eliminating the TDS water quality standard for the S & S Canal, petitioners would remain subject to interim milestones concerning control measures and, by May 15, 2013, would have to "operate any equipment required to be constructed by the

TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber."

Under the Board's procedural rules, petitioners could have filed a response to IEPA's recommendation, but did not. *See* 35 Ill. Adm. Code 104.220. The Board will impose on the variance extension those conditions proposed by IEPA, with minor clarifying language changes. In addition, Section 36(b) of the Act provides that if the Board grants a variance, the Board must do so "upon the condition that the person who receives such variance shall make such periodic progress reports as the Board shall specify." 415 ILCS 5/36(b) (2006). Under the IEPA-proposed condition 8 of the variance extension, by 46 months from the date of today's order, petitioners must design a TDS water quality management plan addressing any contribution of the FCCU wet gas scrubber bleed to any exceedence of an applicable TDS water quality standard. The Board will also require that petitioners submit the plan to IEPA.

If the Board's decision does not effectuate the intent of the parties, or if any condition imposed by the Board is objectionable, petitioners may decline to execute the certificate of acceptance set forth below, and either or both parties may file a motion to reconsider. *See* 35 Ill. Adm. Code 101.520, 101.902, 104.240, 104.248.

CONCLUSION

The Board finds that if this petition for an extension of variance relief from the TDS general use and secondary contact water quality standards (35 Ill. Adm. Code 302.208(g) and 302.407) is not granted, petitioners will incur an arbitrary or unreasonable hardship. The Board finds that issuance of the variance extension is not inconsistent with federal law and will not significantly impact public health or the environment. Therefore, the Board grants the requested variance extension to petitioners, subject to the conditions set forth in this order. The relief provided to petitioners today is an extension of the variance granted on April 21, 2005, in PCB 05-85. The variance extension begins today and lasts for five years.

This opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

The Board grants CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. (petitioners) a variance from the Total Dissolved Solids (TDS) water quality standards of 35 Ill. Adm. Code 302.208(g) and 302.407, subject to the following conditions:

1. The duration of the variance relief from the identified TDS water quality standards is five years, from May 15, 2008 through May 15, 2013. This variance modifies and extends the variance relief granted in PCB 05-85, issued April 21, 2005.

2. This variance applies only to petitioners' Lemont Refinery at 135th Street and New Avenue in Lemont, Will County, regarding TDS concentrations in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent

Order Decree entered January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3833.

3. Unless and until the United States Environmental Protection Agency (USEPA) approves the elimination of the general use water quality standard for TDS, petitioners must monitor and collect samples from the Des Plaines River near the I-55 bridge three times per week, during the winter months (December 1 to March 30), and analyze for TDS. Petitioners must submit the TDS sample results monthly to the Illinois Environmental Protection Agency (IEPA).

4. Unless and until USEPA approves the elimination of the TDS water quality standard for the Chicago Sanitary and Ship Canal (S & S Canal), petitioners must monitor their water intake from the S & S Canal two times per week, during the winter months (December 1 to March 30) for TDS. Petitioners must submit the TDS sample results monthly to IEPA.

5. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must monitor TDS in the effluent from Outfall 001 two times per week, during winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to IEPA.

6. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must diligently attempt to identify any relationship between the TDS levels in the effluent from Outfall 001, and the water quality samples required to be collected pursuant to paragraphs 3, 4, and 5 of this order. To the extent there is a correlation between effluent TDS concentration and any exceedence of an applicable water quality standard for TDS, petitioners must determine the time period that the water from the Fluid Catalytic Converter Unit (FCCU) wet gas scrubber bleed may require additional management or treatment, including holding, treatment, or alternative disposal.

7. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 45 months from the date of the Board order, petitioners must prepare a TDS water quality management plan to address any contribution from the FCCU wet gas scrubber bleed as determined by the analyses performed pursuant to paragraph 6 of this order. Elements to be considered in developing this plan must include a system to retain, treat, or dispose of the FCCU wet gas scrubber bleed or any other approach to eliminate wet gas scrubber bleed from Outfall 001 during periods when applicable TDS water quality standards are exceeded. Options to be considered may include holding tanks, deep well disposal, crystallization, and any other technology or management strategy identified.

8. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 46 months from the date of the Board order, petitioners

must design the TDS water quality management plan for the conditions identified in paragraph 7 of this order and submit the plan to IEPA.

9. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 48 months from the date of the Board order, petitioners must submit to IEPA a wastewater construction permit application for any elements of the TDS water quality management plan for which permits or amended permits are required.

10. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 54 months from the date of the Board order, petitioners must begin construction as needed for an FCCU wet gas scrubber bleed control system and/or implement the TDS water quality management plan.

11. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 60 months from the date of the Board order, petitioners must operate any equipment required to be constructed by the TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber identified in paragraph 2 of this order.

IT IS SO ORDERED.

If petitioners choose to accept this variance extension, they must, within 45 days after the date of this opinion and order, file with the Board and serve on IEPA a certificate of acceptance and agreement to be bound by all the terms and conditions of the granted variance. "A variance and its conditions are not binding upon the petitioner until the executed certificate is filed with the Board and served on the Agency. Failure to timely file the executed certificate with the Board and serve the Agency renders the variance void." 35 Ill. Adm. Code 104.240. The form of the certificate follows:

CERTIFICATE OF ACCEPTANCE

I (We), _____, having read the opinion and order of the Illinois Pollution Control Board in docket PCB 08-33, dated May 15, 2008, understand and accept the opinion and order, realizing that this acceptance renders all terms and conditions of the variance set forth in that order binding and enforceable.

Petitioner CITGO PETROLEUM CORPORATION	**Petitioner PDV MIDWEST REFINING, L.L.C.**
By: _____ **Authorized Agent**	**By:** _____ **Authorized Agent**
Title: _____	**Title:** _____
Date: _____	**Date:** _____

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2006); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, John T. Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on May 15, 2008, by a vote of 4-0.

John T. Therriault

John T. Therriault, Assistant Clerk
Illinois Pollution Control Board

Exhibit B

CITGO LEMONT REFINERY
INFLUENT WINTER TDS, mg/L

2007		2008		2009		2010		2011	
Date	Influent TDS	Date	Influent TDS	Date	Influent TDS	Date	Influent TDS	Date	Influent TDS
		1/4/08	1118	1/2/09	851	1/5/2010	917	1/4/11	836
		1/8/08	1190	1/6/09	831	1/8/2010	685	1/7/11	881
		1/11/08	814	1/9/09	767	1/12/2010	771	1/11/11	817
		1/15/08	734	1/13/09	940	1/15/2010	876	1/14/11	790
		1/18/08	758	1/16/09	1074	1/19/2010	831	1/18/11	1060
		1/22/08	697	1/20/09	1028	1/22/2010	880	1/21/11	866
		1/25/08	304	1/23/09	815	1/26/2010	944	1/25/11	1116
		1/29/08	1045	1/27/09	752	1/29/2010	576	1/28/11	722
		2/1/08	986	1/30/09	695	2/2/2010	798	2/1/11	923
		2/5/08	1544	2/3/09	978	2/5/2010	773	2/4/11	1060
		2/12/08	1738	2/6/09	706	2/9/2010	752	2/8/11	1022
		2/15/08	1468	2/10/09	911	2/12/2010	929	2/11/11	892
		2/19/08	941	2/13/09	942	2/16/2010	1465	2/15/11	1040
		2/22/08	838	2/17/09	821	2/19/2010	1041	2/18/11	**2910**
		2/26/08	827	2/20/09	865	2/23/2010	965	2/22/11	882
		2/29/08	774	2/24/09	922	2/26/2010	1310	2/25/11	734
		3/4/08	1179	2/27/09	877	3/2/2010	1443	3/1/11	1228
		3/7/08	1003	3/3/09	704	3/5/2010	1217	3/4/11	953
		3/11/08	907	3/6/09	811	3/9/2010	986	3/8/11	1057
		3/14/08	910	3/10/09	537	3/12/2010	1097	3/11/11	867
		3/18/08	885	3/13/09	571	3/16/2010	720	3/15/11	1200
		3/21/08	920	3/17/09	682	3/19/2010	1494	3/18/11	978
		3/25/08	1270	3/20/09	743	3/23/2010	799	3/22/11	871
		3/28/08	928	3/24/09	780	3/26/2010	789	3/25/11	758
		4/1/08	2376	3/27/09	780	3/30/2010	789	3/29/11	709
04/03/07	933	4/4/08	968	3/31/09	748	4/2/2010	854	4/1/11	825
04/10/07	796	4/8/08	902	4/3/09	617	4/6/2010	742	4/5/11	862
04/13/07	756	4/11/08	859	4/7/09	712	4/9/2010	570	4/8/11	841
04/17/07	730	4/15/08	564	4/14/09	808	4/13/2010	661	4/12/11	**2890**
04/20/07	797	4/18/08	**4468**	4/17/09	661	4/16/2010	720	4/13/11	**3139**
04/24/07	849	4/22/08	952	4/21/09	801	4/20/2010	905	4/13/11	633
04/27/07	535	4/25/08	997	4/24/09	697	4/23/2010	793	4/15/11	710
		4/29/08	575	4/28/09	649	4/27/2010	691	4/19/11	735
						4/30/2010	705	4/22/11	513
								4/26/11	704
11/02/07	333	11/4/08	299	11/3/09	506	11/2/2010	304		
11/06/07	582	11/7/08	506	11/6/09	533	11/5/2010	473		
11/09/07	559	11/11/08	492	11/10/09	**1883**	11/9/2010	508		
11/13/07	611	11/14/08	276	11/13/09	638	11/12/2010	586		
11/16/07	508	11/18/08	634	11/20/09	644	11/16/2010	568		
11/20/07	519	11/21/08	819	11/24/09	605	11/19/2010	575		
11/23/07	351	11/25/08	598	11/27/09	685	11/23/2010	456		
11/27/07	24	12/2/08	620	12/1/09	535	11/26/2010	475		
11/30/07	404	12/5/08	465	12/4/09	553	11/30/2010	461		
12/04/07	595	12/9/08	558	12/8/09	464	12/3/2010	354		
12/07/07	704	12/12/08	614	12/11/09	730	12/7/2010	495		
12/11/07	1608	12/16/08	729	12/15/09	847	12/10/2010	755		
12/14/07	1393	12/19/08	750	12/18/09	887	12/14/2010	818		
12/18/07	1149	12/23/08	1026	12/22/09	722	12/17/2010	901		
12/21/07	2045	12/26/08	1006	12/29/09	984	12/21/2010	776		
12/28/07	984	12/30/08	815			12/24/2010	711		
						12/28/2010	1049		
						12/31/2010	1220		
Average	**772**		**952**		**777**		**807**		**1,058**
Maximum	**2,045**		**4,468**		**1,883**		**1,494**		**3,139**

Exhibit C

Lemont Refinery
Influent Chloride Data from Chicago Sanitary Ship Canal (CSSC)

Influent Chloride,		Influent Chloride,		Influent Chloride,		Influent Chloride,		Influent Chloride,		Influent Chloride,		Influent Chloride,	
Date	mg/L	Date	mg/L	Date	mg/L	Date	mg/L	Date	mg/L	Date	mg/L	Date	mg/L
1/10/05	**835**	1/2/06	330	1/1/07	174	1/7/08	**562**	1/2/09	342	1/1/10	344	01/03/11	369
1/12/05	492	1/6/06	320	1/5/07	156	1/11/08	272	1/5/09	297	1/4/10	350	01/07/11	391
1/13/05	580	1/9/06	314	1/8/07	113	1/18/08	270	1/9/09	270	1/6/10	301	01/10/11	291
1/14/05	274	1/13/06	276	1/12/07	133	1/21/08	256	1/12/09	300	1/8/10	276	01/14/11	286
1/17/05	242	1/16/06	226	1/15/07	250	1/25/08	252	1/16/09	436	1/11/10	223	01/17/11	407
1/19/05	250	1/20/06	215	1/19/07	239	1/28/08	**514**	1/19/09	470	1/15/10	311	01/21/11	264
1/21/05	235	1/23/06	220	1/22/07	203	2/1/08	**556**	1/23/09	331	1/18/10	267	01/24/11	**521**
1/24/05	430	1/27/06	413	1/26/07	384	2/4/08	**625**	1/26/09	282	1/22/10	297	01/28/11	277
1/31/05	**634**	1/30/06	308	1/29/07	286	2/8/08	**896**	1/30/09	224	1/25/10	342	01/31/11	348
2/4/05	413	2/3/06	298	2/2/07	225	2/11/08	**848**	2/2/09	298	1/29/10	281	02/04/11	353
2/11/05	**416**	2/6/06	252	2/5/07	227	2/15/08	**666**	2/6/09	214	2/1/10	310	02/07/11	365
2/14/05	364	2/10/06	243	2/9/07	181	2/18/08	489	2/9/09	270	2/5/10	259	02/11/11	425
2/25/05	307	2/13/06	238	2/12/07	224	2/22/08	351	2/13/09	402	2/8/10	305	02/14/11	**605**
3/7/05	283	2/17/06	251	2/16/07	181	2/25/08	376	2/16/09	355	2/12/10	283	02/18/11	**1099**
3/11/05	286	2/20/06	276	2/19/07	**695**	2/29/08	299	2/20/09	310	2/15/10	**833**	02/21/11	**504**
3/14/05	277	2/24/06	249	2/23/07	**549**	3/3/08	460	2/23/09	344	2/19/10	**446**	02/25/11	388
3/21/05	300	2/27/06	**484**	2/26/07	**600**	3/7/08	398	2/27/09	376	2/26/10	**648**	02/28/11	423
3/25/05	272	3/3/06	200	3/2/07	734	3/10/08	**364**	3/2/09	255	3/1/10	**559**	03/04/11	401
3/28/05	270	3/17/06	209	3/5/07	**616**	3/14/08	333	3/6/09	**881**	3/3/10	**580**	03/07/11	336
4/4/05	240	3/20/06	201	3/9/07	395	3/17/08	316	3/9/09	167	3/5/10	**528**	03/11/11	341
4/8/05	232	3/31/06	189	3/12/07	250	3/21/08	301	3/13/09	198	3/8/10	422	03/14/11	353
4/11/05	221	4/3/06	208	3/16/07	350	3/24/08	294	3/16/09	237	3/12/10	343	03/18/11	348
4/15/05	200	4/7/06	189	3/19/07	340	3/28/08	388	3/20/09	252	3/19/10	**536**	03/21/11	286
4/18/05	199	4/10/06	183	3/23/07	281	3/31/08	413	3/23/09	249	3/22/10	261	03/25/11	273
4/22/05	197	4/14/06	188	3/23/07	281	4/4/08	333	3/27/09	245	3/22/10	261	03/28/11	252
4/25/05	196	4/17/06	190	3/26/07	415	4/7/08	328	3/30/09	237	3/26/10	259	04/01/11	257
4/29/05	184	4/21/06	128	3/30/07	258	4/11/08	275	4/3/09	225	3/29/10	285	04/04/11	201
		4/24/06	154	4/2/07	252	4/14/08	247	4/6/09	228	4/2/10	266	04/08/11	254
		4/28/06	162	4/6/07	236	4/18/08	158	4/10/09	210	4/5/10	246	04/11/11	218
				4/9/07	232	4/21/08	266	4/13/09	231	4/9/10	187	04/15/11	221
				4/13/07	214	4/25/08	251	4/17/09	214	4/12/10	192	04/18/11	237
				4/16/07	242	4/28/08	242	4/20/09	240	4/16/10	210	04/22/11	188
				4/20/07	259			4/24/09	218	4/19/10	215	04/25/11	164
				4/23/07	241			4/27/09	220	4/23/10	218	04/29/11	155
				4/27/07	136					4/26/10	191		
				4/27/07	136					4/30/10	197		
				4/30/07	169								
11/4/05	146	11/3/06	134	11/2/07	111	11/3/08	145	11/2/09	72	11/1/10	104		
11/7/05	126	11/6/06	149	11/5/07	122	11/7/08	146	11/6/09	111	11/5/10	107		
11/11/05	105	11/13/06	118	11/9/07	120	11/10/08	152	11/9/09	158	11/8/10	**684**		
11/14/05	132	11/17/06	108	11/12/07	127	11/14/08	115	11/11/09	134	11/12/10	121		
11/18/05	110	11/20/06	128	11/16/07	130	11/17/08	147	11/13/09	137	11/15/10	**870**		
11/21/05	116	11/24/06	140	11/19/07	128	11/21/08	149	11/16/09	151	11/19/10	123		
11/25/05	128	11/27/06	143	11/23/07	122	11/24/08	154	11/20/09	137	11/22/10	142		
11/28/05	128	12/1/06	105	11/26/07	100	11/28/08	149	11/23/09	133	11/26/10	111		
12/2/05	**146**	12/4/06	**14**	11/30/07	103	12/1/08	155	11/27/09	145	11/29/10	87		
12/5/05	130	12/8/06	195	12/7/07	261	12/5/08	133	11/30/09	119	12/3/10	91		
12/9/05	183	12/11/06	236	12/10/07	**717**	12/8/08	244	12/4/09	119	12/6/10	111		
12/12/05	192	12/15/06	249	12/14/07	**654**	12/12/08	272	12/7/09	143	12/10/10	295		
12/16/05	406	12/18/06	200	12/17/07	404	12/15/08	277	12/9/09	144	12/13/10	177		
12/19/05	264	12/22/06	198	12/21/07	**998**	12/19/08	313	12/11/09	286	12/17/10	316		
12/23/05	295	12/25/06	129	12/24/07	**614**	12/22/08	337	12/14/09	275	12/20/10	316		
12/26/05	253	12/29/06	139	12/28/07	488	12/26/08	448	12/18/09	301	12/24/10	259		
12/30/05	357			12/31/07	412	12/29/08	385	12/21/09	259	12/27/10	326		
								12/25/09	412	12/31/10	**525**		
								12/28/09	424				
Average	**274**		**211**		**305**		**333**		**258**		**311**		**347**
Maximum	**835**		**484**		**998**		**896**		**881**		**870**		**1099**

Exhibit D

BMP/REQ/CWH
Original copy filed

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026
217/782-0610

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

JUN 2 2 2007

CITGO Petroleum Corporation
135th and New Avenue
Lemont, Illinois 60439

Re: CITGO Petroleum Corporation
CITGO Petroleum Corporation - Lemont Refinery
NPDES Permit No. IL0001589
Modification of NPDES Permit (After Public Notice)

Gentlemen:

The Illinois Environmental Protection Agency has reviewed the request for modification of the above-referenced NPDES Permit and issued a public notice based on that request. The final decision of the Agency is to modify the Permit as follows:

Internal outfall A01 has been added for the discharge of scrubber wastewater. This outfall will be regulated for temperature and hexavalent chromium. Outfall A01 will be subject to the general use temperature limitations, while outfall 001 will be regulated by the secondary contact temperature limitations. Special Conditions 17 and 19 have been changed and Special Condition 20 has been added.

Enclosed is a copy of the modified Permit. You have the right to appeal this modification to the Illinois Pollution Control Board within a 35 day period following the modification date shown on the first page of the permit.

Should you have any question or comments regarding the above, please contact Darin LeCrone of my staff.

Sincerely,

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:DEL:05121401.bah

Attachment: Modified Permit

cc: Records Unit
Compliance Assurance Section
Des Plaines Region
NIPC
US EPA

RECEIVED
JUN 2 5 2007

NPDES Permit No. IL0001589

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Modified (NPDES) Permit

Expiration Date: July 31, 2011

Issue Date: July 28, 2006
Effective Date: August 1, 2006
Modification Date: June 22, 2007

Name and Address of Permittee:

CITGO Petroleum Corporation
135th and New Avenue
Lemont, Illinois 60439

Facility Name and Address:

CITGO Petroleum Corporation - Lemont Refinery
135th and New Avenue
Lemont, Illinois 60439
(Will County)

Discharge Number and Name:	Receiving Waters:
001 Treated Refinery Wastewater	Chicago Sanitary and Ship Canal
A01 FCCU Wet Gas Scrubber Wastewater	
002 Stormwater Basin Overflow	Illinois and Michigan Canal
003 Stormwater	Illinois and Michigan Canal
004 Stormwater	Illinois and Michigan Canal
005 Stormwater	Illinois and Michigan Canal
006 Stormwater	Illinois and Michigan Canal
007 Intake Screen Backwash	Chicago Sanitary and Ship Canal
008 Stormwater	Illinois and Michigan Canal

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:DEL:05121401.bah

NPDES Permit No. IL0001589

Effluent Limitations and Monitoring

1. From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 001 - Treated Refinery Wastewater: 5.79 MGD DAF

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Contributory Waste Streams:						
1) Process Wastewater			5) Hydrostatic Test Water			
2) Cooling Tower Blowdown			6) Chemical Cleaning			
3) Non-Process Wastewater, Stormwater, Utility Water, Boiler Blowdown			7) Seneca, Chicago Carbon, BOC Process Water			
			8) Scrubber Wastewater			
4) Sanitary Waste Water						
Flow (MGD)	See Special Condition 1				Daily	Continuous
pH	See Special Condition 2				2/Week	Grab
BOD_5	1008.80	2472.32			2/Week	Composite
$CBOD_5$			20	40	2/Week	Composite
Oil and Grease	536.40	1005.75	15	20	2/Week	Mathematical Composite
Total Suspended Solids	1475.10	2313.23	25	50	2/Week	Composite
Phenols	10.28	42.37	0.3	0.4	2/Week	Composite
Ammonia as N	1005.75	2212.65	9.4	26.0	2/Week	Composite
COD	12873.60	24808.50			2/Week	Composite
Chromium (Total)	11.99	34.51		1.0	2/Week	Composite
Chromium (Hexavalent)*	0.99	2.20	0.1	0.3	1/Month	Grab
Sulfide	9.72	21.79			2/Week	Composite
Cyanide	5.04	14.41	0.1	0.2	2/Week	Composite
Fluoride	756.60	2161.70	15	28.6	2/Week	Composite
Sulfate				Monitor Only	2/Week	Composite
Total Dissolved Solids				Monitor Only	2/Week	Composite
Temperature	See Special Condition 17				Continuous	Measure
Total Residual Chlorine	See Special Condition 19			0.05	1/Day	Grab

* See Special Condition 20

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Effluent Limitations and Monitoring

1. From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): A01 - FCCU Wet Gas Scrubber Wastewater: 0.375 MGD

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)					Estimate When Monitoring	
Temperature*					Continuous	Measure
Chromium (Hexavalent)**			0.1	0.3	1/Month	Grab

*See Special Condition 17
** See Special Condition 20

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Effluent Limitations and Monitoring

1. From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 002 - Stormwater Basin Overflow: Intermittent

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Contributory Waste Streams: 1) Refinery Stormwater 2) Treated Process Water (Fire Water) 3) Utility Water 4) Boiler Blowdown 5) Tank Farm Stormwater 6) Hydrostatic Test Water 7) Biomass 8) Off Site Stormwater Runoff 9) Exxon Mobil Terminal Stormwater 10) Chicago Carbon Stormwater 11) Kinder Morgan Stormwater 12) BOC Stormwater 13) Seneca Stormwater						
Flow (MGD)	See Special Condition 1				Estimate When Monitoring	
pH	See Special Condition 2				1/Day	Grab
BOD_5			20	40	1/Day	Grab
Total Suspended Solids			25	50	1/Day	Grab
Oil and Grease			15	30	1/Day	Grab
Phenols			0.3	0.6	1/Day	Grab
Chromium (Total)				1.0	1/Day	Grab
Chromium (Hexavalent)			0.1	0.3	1/Day	Grab
Cyanide			0.1	0.2	1/Day	Grab
Fluoride			15	28.6	1/Day	Grab
Ammonia as N			9.4	26.0	1/Day	Grab
COD				Monitor	1/Day	Grab
Sulfide				Monitor	1/Day	Grab

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Effluent Limitations and Monitoring

1. From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 007 - Intake Screen Backwash: 0.027 MGD DAF

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week	Estimate
Total Residual Chlorine				0.05	1/Week*	Grab

*Sample frequency shall be 1/Week when chlorinating.

Outfalls: 003, 004, 005, 006, and 008 - Stormwater Runoff: Intermittent

See Special Condition 10

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SPECIAL CONDITION 1. Flow (in Million Gallons per Day) shall be reported as a monthly average and a daily maximum on the DMR form.

SPECIAL CONDITION 2. The pH shall be in the range 6.0 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 4. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 5. This permit may be modified to include different final effluent limitations or requirements which are consistent with applicable laws, regulations, or judicial orders. The Agency will public notice the permit modification.

SPECIAL CONDITION 6. Mathematical composites for oil, fats and greases shall consist of a series of grab samples collected over any 24-hour consecutive period. Each sample shall be analyzed separately and the arithmetic mean of all grab samples collected during a 24-hour period shall constitute a mathematical composite. No single grab sample shall exceed a concentration of 75 mg/l.

SPECIAL CONDITION 7. For the purpose of this permit discharges from outfalls 003, 004, 005, 006, and 008 are limited to stormwater, free from process and other wastewater discharges.

SPECIAL CONDITION 8. Stormwater discharges identified as outfalls 003, 004, 005, 006, and 008 may be rerouted to the facility's WWTP and discharged via outfall 001, subject to the limitations of this permit. If these stormwater discharges are routed to the WWTP then they shall no longer be subject to the requirements of Special Condition 10, but instead shall meet the requirements of Special Condition 9.

SPECIAL CONDITION 9. (Outfalls 001 and 002) The Agency has determined that the effluent limitations in this permit constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 10.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be developed by the permittee for the storm water associated with industrial activity at this facility. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

B. The plan shall be completed within 180 days of the effective date of this permit. Plans shall provide for compliance with the terms of the plan within 365 days of the effective date of this permit. The owner or operator of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request. [Note: If the plan has already been developed and implemented it shall be maintained in accordance with all requirements of this special condition.]

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

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D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph G of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

2. A site map showing:

   i. The storm water conveyance and discharge structures;

   ii. An outline of the storm water drainage areas for each storm water discharge point;

   iii. Paved areas and buildings;

   iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

   v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

   vi. Surface water locations and/or municipal storm drain locations

   vii. Areas of existing and potential soil erosion;

   viii. Vehicle service areas;

   ix. Material loading, unloading, and access areas.

3. A narrative description of the following:

   i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

   ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

   iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

   iv. Industrial storm water discharge treatment facilities;

   v. Methods of onsite storage and disposal of significant materials;

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

   i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

   ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

   iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

   iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

   v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

   vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

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G. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

H. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

I. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

J. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

Construction Authorization

K. Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as part of the stormwater management practice shall be included in the SWPPP.

4. Construction activities which result from treatment equipment installation, including clearing, grading and excavation activities which result in the disturbance of one acre or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

L. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part G of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) Which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

M. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

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N. Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

O. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

SPECIAL CONDITION 11. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 12. For the purpose of this permit, discharges from outfall 002 are limited to overflow from the stormwater retention basin, free from additional process or other discharges.

SPECIAL CONDITION 13. The permittee shall monitor the nitrogen concentration of it's oil feed stocks and report the concentrations to the Agency on an annual basis. Reports shall be submitted no later than 60 days after the end of the calendar year.

SPECIAL CONDITION 14. The permittee may use the upset provision as an affirmative defense provided all the requirements of 40 CFR 122.41(n) are met.

SPECIAL CONDITION 15. Discharge from this facility shall be in accordance with 35 Ill. Adm. Code Section 304.213 for ammonia nitrogen. This section requires that the discharge meet BAT limitations pursuant to 40 CFR 419.23, as well as ammonia nitrogen concentration limits of 9.4 mg/l as a monthly average and 26.0 mg/l as a daily maximum.

Modification Date: June 22, 2007

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SPECIAL CONDITION 16. Storm Water Credit for Outfall 001:

An additional stormwater credit for the following parameters shall be calculated based on 100% of the stormwater flow as defined below.

	Pounds per 1000 gallons of stormwater	
Parameter	Average	Maximum
BOD	0.22	0.40
Total Suspended Solids	0.18	0.28
COD	1.5	3.0
Oil and Grease	0.067	0.13
Phenol	0.0014	0.0029
Cr (tot)	0.0018	0.0050
Cr (+6)	0.00023	0.00052

Dry Weather Flow -- The average flow from the waste water treatment facility for the last three consecutive zero precipitation days. Previously collected storm water shall not be included.

Stormwater Flows -- The stormwater runoff which is treated in the waste water treatment facility shall be defined as that portion of the flow greater than the dry weather flow.

In computing monthly average permit limits to include stormwater credit, the pound credit calculated above shall be averaged along with process pound limits over the 30 day period. Explanatory calculations and flow data shall be submitted together with discharge monitoring reports.

The stormwater credit does not authorize the permittee to exceed the concentration limits contained in effluent Limitations and Monitoring, Page 2.

SPECIAL CONDITION 17.

a) The discharge from outfall A01 shall be subject to the following limitations:

During the months of April through November, the discharge shall not exceed 90° F, except that one percent of the hours in any 12 month period may exceed 90° F but shall never exceed 93° F at any time.

The monthly average and monthly maximum value shall be reported on the DMR. The permittee shall also report the total number hours the temperature exceeds 90° F.

b) The waters receiving the discharge from outfall 001 are designated as Secondary Contact and Indigenous Aquatic Life Waters by Section 302.408, Illinois Administrative Code, Title 35, Chapter 1, Subtitle C, as amended. These waters shall meet the following standard:

Temperatures shall not exceed 93° F more than 5% of the time, or 100° F at any time at the edge of the mixing zone which is defined by Rule 302.102 of the above regulations.

The monthly maximum value shall be reported on the DMR form. In lieu of monitoring at the edge of the mixing zone, the permittee may demonstrate compliance with this paragraph by monitoring at outfall 001.

SPECIAL CONDITION 18. The permittee was granted a variance from the water quality standard for Total Dissolved Solids (TDS) for the discharge at outfall 001 in accordance with Illinois Pollution Control Board Order PCB 05-85. The permittee shall commence its study of downstream TDS concentrations in accordance with the schedule contained in this order. This permit may be modified to include any final limitations or monitoring requirements which may be necessary based on the results of the study, or future Illinois Pollution Control Board actions with result to Total Dissolved Solids water quality standards. This variance expires on December 15, 2009.

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SPECIAL CONDITION 19:

a. From the effective date of this permit until such time that the FCCU Scrubber System becomes operational, monitoring for Total Residual Chlorine (TRC) is only required during those times when breakpoint or super chlorination is used for short term ammonia treatment in the treated water basin. Prior to discharging from the treated water basin following chlorine treatment, the permittee shall take a grab sample from the basin to determine compliance with the TRC limit of 0.05 mg/l. The discharge from the basin shall then be sampled once per day using a grab sample, for a period of five days after resuming the discharge. The permittee shall submit an attachment to the DMR explaining the reason for the temporary chlorine treatment, the amount of chlorine used, and length of the temporary cessation of discharge. The maximum concentration recorded shall be reported on the DMR.

b. The permittee shall notify the Agency in writing 30 days (or as soon as practicable) prior to the start of operation of the FCCU Scrubber Break Point Chlorination System. Upon start up of the break point chlorination system, the discharge from Outfall 001 shall be monitored on a continuous basis for Total Residual Chlorine and subject to a limit of 0.05 mg/l as an instantaneous maximum. The maximum recorded concentration shall be reported on the DMR.

c. In the event that the continuous monitoring system is not functioning or need routine maintenance, the permittee may substitute a once per day grab sample at Outfall 001 until such time that the continuous analyzer is operational. The permittee shall include an attachment to the DMR explaining the reason and length of the outage.

SPECIAL CONDITION 20: For the purposes of compliance at Outfall 001, samples for hexavalent chromium shall be taken at a point prior to entering the aeration basin. Upon commencement of operation of the FCCU Scrubber System, the discharge from internal Outfall A01 shall also be sampled on a monthly basis for hexavalent chromium. Compliance with hexavalent chromium load limits at outfall 001 shall be determined by multiplying the concentration times the flow for Outfall A01 plus the concentration times the flow prior to entering the treated water basin.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8 Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. This period may be extended by request of the Agency at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application.** All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

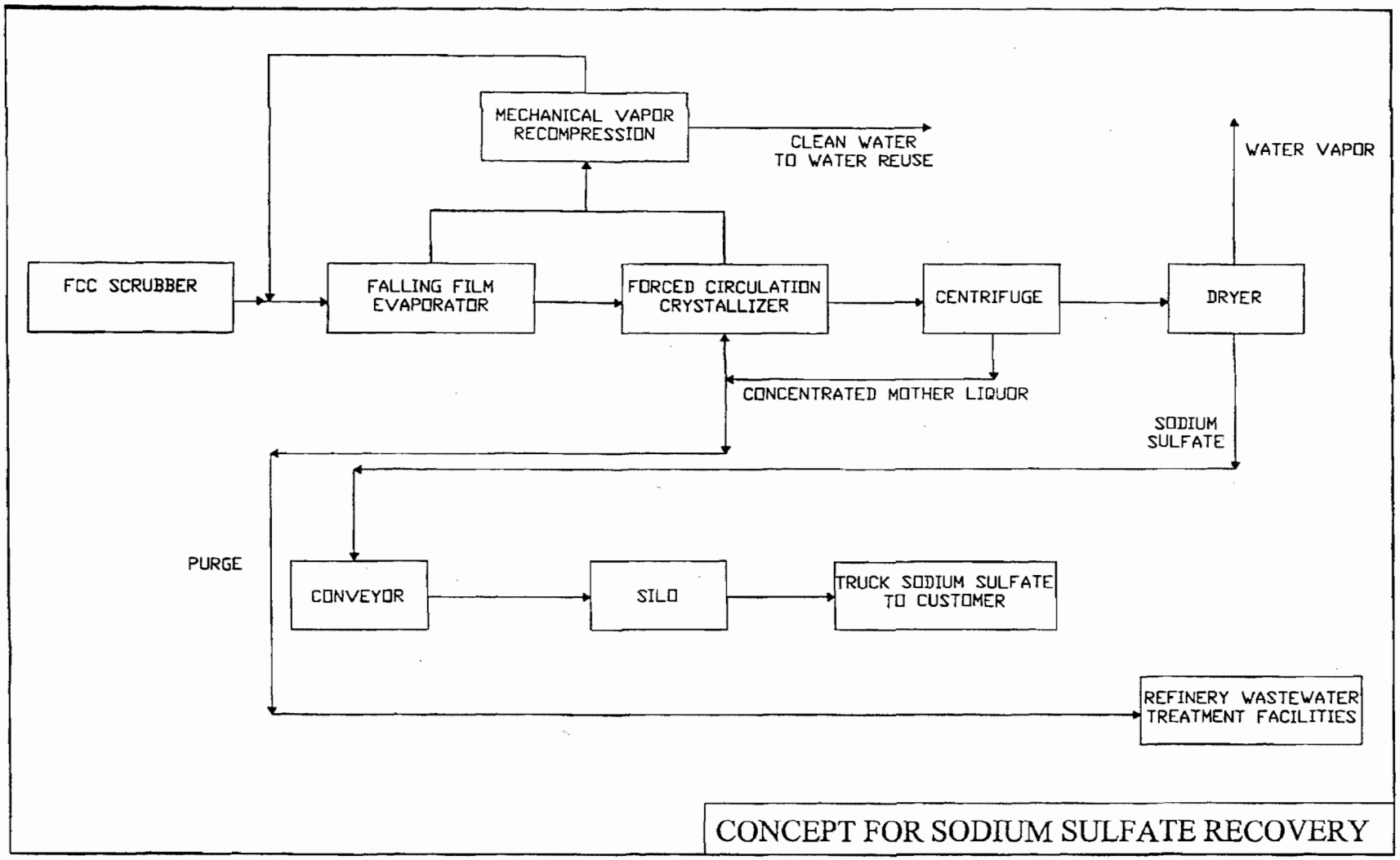
(b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

Exhibit E



CONCEPTUAL PROCESS FLOW DIAGRAM FOR EVAPORATION ALTERNATIVE

CADEFILE: CITGOLCONEP

Exhibit F

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	R08-9
CHICAGO AREA WATERWAY SYSTEM	)	(Rulemaking-Water)
AND THE LOWER DES PLAINES RIVER:	)	
Adm. Code Parts 301, 302, 303 and 304	)	(Subdocket C)

NOTICE OF FILING

To: John Therriault, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street - Suite 11-500
Chicago, IL 60601

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Persons included on the attached
SERVICE LIST

Please take notice that on October 8, 2010, we filed electronically with the Office of the Clerk of the Illinois Pollution Control Board the attached Pre-Filed Testimony of Robin L. Garibay, REM and accompanying Attachments, which is served upon you.

CITGO PETROLEUM CORPORATION, and
PDV MIDWEST, LLC, Petitioners

By: _____
One of Its Attorneys

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Ariel J. Tesher
SNR Denton US LLP
233 S. Wacker Drive
Suite 7800
Chicago, IL 60606-6404

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	R08-9
CHICAGO AREA WATERWAY SYSTEM	)	(Rulemaking-Water)
AND THE LOWER DES PLAINES RIVER:	)	
Adm. Code Parts 301, 302, 303 and 304	)	(Subdocket C)

PRE-FILED TESTIMONY OF ROBIN L. GARIBAY, REM

INTRODUCTION

My name is Robin L. Garibay, REM, and I am a principal of ENVIRON International Corporation and the Manager for the Wastewater Management services of the Integrated Industrial Wastewater Management Practice Area. I have over 20 years of experience in wastewater management, including participation in the development of federal and state water quality standards, NPDES permitting and establishment of water quality-based effluent limits based on water quality criteria.

I am a Registered Environmental Manager (REM) with a B.S. in biochemistry from Rice University and graduate work in biochemistry at Texas A&M University. Prior to joining The ADVENT Group, Inc. (now ENVIRON) in 1987, I worked for the State of Kansas Board of Agriculture Laboratories focusing on pesticide characterization in products, residues, and groundwater. Since joining ADVENT, I worked on characterization studies of effluents and receiving waters in support of NPDES permitting including wasteload allocation and TMDL studies. In addition, I have assisted in determining the applicability of designated uses in support of proposed revisions to water quality standards or in support of a variance from water quality standards. My work has been on behalf of both municipal and industrial clients.

I personally have worked on behalf of numerous industrial and municipal clients in the State of Illinois on the development of elements of the Illinois water quality standards program and on NPDES permitting issues. I have participated in the Illinois rulemaking process on adopting the federal Great Lakes Water Quality Agreement ("GLI") into the Illinois Water Quality Standards, revision to the antidegradation standard and implementation procedures, and revisions to the sulfate and TDS water quality standards.

In preparing this testimony, I worked closely with Dr Jeff Fisher from the Environ office for the Pacific Northwest. I sought out Dr Fisher because of his experience in invasive species controls specific to the Great Lakes. Our resumes are included in Attachment 1.

ENVIRON's testimony, on behalf of the Citgo Lemont Refinery, will focus on the highest quality of aquatic life use in the Chicago Sanitary and Ship Canal (Ship Canal), which is achievable taking into account the Use Attainability Analysis (UAA) factors established by U.S.EPA. The intent of this testimony is to combine documented facts with recent information on the appropriate use for the Lower Reach of the Ship Canal; I am not going to comprehensively review the materials submitted over the past 3 years in with respect to the proposed upgrade of the Lower Reach of the Ship Canal aquatic designated use from the current Indigenous Aquatic Life to Aquatic Life Use B. As this rulemaking has progressed, the Lemont Refinery has recommended that the Lower Reach of the Ship Canal be recognized for its uniqueness in capabilities to support aquatic life which are not captured in the proposed Aquatic Life Use B. Recently, it has become evident to the Lemont Refinery the importance of not upgrading the designated aquatic life use to Aquatic Life Use B. In our view, effective water quality management strongly indicates that this upgrade recommendation should not be followed by the Board.

The Ship Canal is unique in regards to recreational and aquatic life support uses as demonstrated by the results of the IEPA 2007 Use Attainability Analysis (UAA), which resulted in the proposed designation for non-recreation use and Aquatic Life Use B. However, when considering the UAA Factors for Water Quality standards, with respect to Human-Caused Conditions, Hydrologic Modifications, and Physical Conditions, we believe that the Lower Reach of the Ship Canal cannot support the upgrade to an aquatic designated Use B. In this testimony we will address the UAA factors as they relate to appropriate aquatic use designation for the Lower Reach. We will review three of the factors that EPA has recognized justify a state choosing not to "upgrade" the uses; while IEPA also found that these three factors were applicable, they seem to have ignored those findings in their approach to upgrading the water quality standards, particularly for the Lower Reach of the Ship Canal. Indeed, more recent information provides even greater reason why one of the factors, UAA Factor 3, due to the need to protect Lake Michigan against invasive species, is even more significant than when this proceeding began.

In this testimony, I will first review Factors 4 and 5, and then turn to Factor 3, and the additional reasons why this Factor is particularly applicable for the Lower Reach of the Ship Canal.

UAA FACTOR 4 – HYDROLOGIC MODIFICATION AND UAA FACTOR 5 – PHYSICAL CONDITION

The assessment and data in evaluating the role of hydrologic modifications and physical conditions in determining the appropriate aquatic use of the Ship Canal (also referred to as CSSC) are intertwined due to the design and operations of the Ship Canal and as such the discussion is in support of both factors.

The Lower Reach of the Ship Canal is defined as starting "at the confluence with Calumet-Channel and ends at the confluence with Des Plaines River near the EJ&E railroad crossing". It includes monitoring data from sites described as:

- 16th St at Lockport or Lockport or AWQM 92
- Romeoville Rd or Romeoville (electric barriers are located just upstream of Romeoville Rd bridge)
- Stephen St or AWQM 48

This Lower Reach of the Ship Canal reach does not include data from monitoring sites described as "Damen Ave", "Cicero Ave", "Harlem Ave", "Route 83", "Bedford Park", or "Willow Springs" which fall into the upper reach of the Ship Canal.

Habitat and biological data from the Lower Reach have been summarized in documents originally filed by IEPA to support this rulemaking specifically IEPA "Statement of Reasons" and its references to Attachment B (CDM, Chicago Area Waterways Use Attainability Analysis, August 2007) and Attachment R (CABB, Rankin, "Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area). In addition, the recently submitted document, as PC#284, "Chicago Area Waterway System Habitat Evaluation and Improvement Study: Habitat Evaluation Report", MWRDGC and LimnoTech, January 2010, provides further information in support of my testimony.

There is consistency in the characterization of the Lower Reach amongst the researchers with the 2010 report incorporating recent results of recent surveys. Highlights include:

- Habitat for supporting aquatic life is poor to very poor
- Richness and abundance of aquatic species is poor to very poor

Attributes referenced by the researchers as contributing to the poor to very poor scores include:

- Canal depth and shape (square or rectangular cross-section) to accommodate navigation and flood control (i.e., deep draft steep vertical-wall)
- No sinuosity (the Ship Canal is a navigation canal)
- Absence of riffle-run, pool-glide characteristics (the Ship Canal is a navigation canal)
- Rapid changes in flow velocity and water level (4 to 6 feet in a 24-hr to 48-hr period) to accommodate flood control, including stormwater run-off, and maintain navigation
- Little or no fixed aquatic or overhanging riparian vegetation or other refugia for aquatic life
- Poor substrate material and silty substrates
- Presence of suspended sediments from navigation and flood control resuspension, stormwater runoff, and treated effluents.

Data in support of these attributes have been presented in 2007 and 2010 reports with the habitat and biological assessments summarized for the Lower Reach of the CSSC. The available information from these reports includes:

2007 Qualitative Habitat Evaluation Index (QHEI) Scores are:

- 37 (Stephen St)
- 27 (Romeoville)
- 40.5 (Lockport)

As referenced in 2007 report, QHEI scores less than 30 are indicative of very poor ability to support aquatic life and scores between 30 and 45 are indicated of a poor ability to support aquatic life.

2010 Report of Primary QHEI Habitat Attributes[1] applicable to the Ship Canal:

- Off-channel Refuge: 4 (score), applicable to entire reach of Ship Canal (maximum score for CAWS is 8, and a higher score represents better habitat)

- Vertical Wall Banks: 35.5 miles is vertically walled with 78% of the walled banks due to construction of Ship Canal through limestone bedrock. The Ship Canal has a high percentage of vertical walls in the CAWS. Such extensive armoring removes natural interactions that would otherwise occur with an intact riparian zone greatly reducing the quality of aquatic habitat to support life history functions of fish and invertebrates

[1] Primary habitat attributes for the CAWS as related to correlation with fish richness and/or abundance and may have some potential for improvement in the CAWS.

- Riprap-armored Banks: 3.3 miles, which is relatively few miles as compared to other CAWS

- Macrophyte Cover:
  - 0% (Stephen St)
  - < 2% (Lockport)

  The range for other CAWS is 0% to 13% submerged aquatic macrophyte cover; higher percentage coverage, the more supportive of aquatic life.

- Overhanging Vegetation:
  - ~2% (Stephen St)
  - ~3% (Lockport)

  The range of other CAWS is 0% to ~34% overhanging riparian vegetation, higher percentage overhanging vegetation, the more supportive of aquatic life.

- Bank Pocket Areas (score) with a maximum for CAWS of 20.
  - ~20 (Stephen St)
  - ~6 (Lockport)

  A higher score would be more supportive of aquatic life.

Biological assessment summaries were based on data generated between 1993 to 2002 for the 2007 report and 2001 to 2008 for the 2010 report.

- 2007 fish Index of Biological Integrity (IBI) = 17 (Lockport)

  IEPA considers IBI scores of greater than 41 to be indicative of a fully supported fish community and scores of less than 20 to be very poor.

- 2007 Macroinvertebrate Biotic Index (MBI)
  - 10 (Lockport)

  IEPA considers MBI scores of less than 5.9 to be indicative of a fully supported macroinvertebrate community and values greater than 8.9 to be poor.

- 2010 Fish Richness = 2 to 9 species or taxa (Lockport) with more than 80% to all of the species classified as tolerant (to pollution) species. For example, gizzard shad, carp, and certain sunfishes, with their presence being noted to being consistent with only mobile species suited to the habitat conditions.

- 2010 Fish Abundance = 22 to 179 individuals, which is consistent with the presence of mobile species

In addition to habitat and biological assessments, the researchers have also evaluated and summarized sediment quality and water quality data for the Ship Canal. Sediment quality for the Ship Canal exceeds published sediment threshold effect concentrations for 7 metals and 2 organic chemical families. Water quality, when compared to the upgraded water quality criteria for Illinois general aquatic use, is not been consistently attained for 10 constituents including DO, temperature and ammonia. Citgo has presented (March 25, 2009) and will be presenting additional TDS and chloride water quality data specific to the Lower Reach of the Ship Canal as compared to the potential water quality criteria to protect upgraded aquatic life use. However, the predominant factor impacting aquatic life and the ability of the lower reach of the Ship Canal in supporting aquatic life are related to the physical habitat characteristics inherent to the Canal. These physical habitat conditions will not change regardless and cannot be significantly improved regardless of proposed water quality criteria changes associated with the proposed upgrade to Aquatic Life Use B designation.

The habitat characteristics which result in poor to very poor attributes to support aquatic life are directly related to the main objectives of this manmade canal: to support commercial navigation and convey waters away from Lake Michigan. The waters conveyed away from Lake Michigan include stormwater from point sources and non-point sources, treated effluent, and non-contact cooling water. In operating the Ship Canal, there is mandatory management of the water level in the canal for navigation and flood control. The combination of operations and physical construction constrains shoreline habitat, causes drying and wetting of the limited shoreline habitat, encourages sediment scouring and resuspension, and does not allow for submerged or overhanging vegetation to be in-place. As noted in the Statement of Reason, these conditions are

"irreversible", the design and operations of the lower reach of Canal are such that a biological condition that meets the Clean Water Act aquatic life goal are not maintainable.

The aquatic life in the lower reach of Ship Canal has been classified according to established species richness and abundance estimations relevant to the ecoregion as 'poor' to 'very poor', with low species richness. The fish species have been identified as mobile species that are predominately pollutant tolerant, with the habitat predominantly unsupportive of their early life stages. The macroinvertebrates are dominated by pollutant tolerant worms.

The design and operation of the Lower Reach of the Ship Canal and the impact on habitat features certainly impact the aquatic life uses as noted by monitoring data and the recent statistical analysis relating fish data to habitat data submitted by the District. Based on the proposed definition of Aquatic Life Use B and the criteria to support that designation, IEPA seems to have incorrectly interrupted their own evaluation of Factors 4 and 5 to support an upgraded use for the Lower Reach of the Ship Canal. We do not agree. In our understanding, since IEPA found that the EPA goals for optimal uses of the waters could not be obtained, and particularly since they were the result of irreversible conditions for more than one factor, the focus should have been on what water quality standards were needed to support those uses that were, in fact, occurring.

As the design and operation of the Lower Reach of the Ship Canal are irreversible, the evaluation of the UAA Factor 4 - of hydrologic modification, including dams, - and Factor 5 - of physical conditions, including flow, depth, pools and riffles - would lead to a determination that an expectation of attainment of aquatic life use higher than the current use is extremely unlikely.

Moreover, based on the District's recently submitted "Habitat Improvement Report", and disregarding economic feasibility, the technically feasible options for improving habitat for the Ship Canal would not significantly impact the Ship Canal fisheries quality. We would assert that for the Lower Reach of the Ship Canal, habitat improvements identified in this report may not be technical feasible. Based on our evaluation of the Factors 4 and 5 the appropriate expectation of designated use for the Lower Reach of the Ship Canal is as it is currently designated for the support of indigenous aquatic life.

UAA FACTOR 3 – HUMAN-CAUSED CONDITIONS

Many of the human-caused conditions that do not support an upgrade to the aquatic life use designation and cannot be remedied have been identified in the evaluation of UAA Factors 4 and 5. These are directly related to the use of the Ship Canal for navigation, flood control, and conveyance of water away from Lake Michigan. Our evaluation of human-caused conditions preventing an upgrade of aquatic life use designation shows that, if those measures were "remedied", that such would cause more environmental damage to correct. And this is particularly true with respect to the operation of the Lower Reach of the Ship Canal for invasive species control. As noted in the 2007 Statement of Reason, the operation of the Aquatic Invasive Species Dispersal Barrier, involves applying an electrical charge directly to the water at rate intended to prevent any fish from passing alive (pg 50, IEPA Statement of Reason). Since the 2007 Statement of Reason, the operations of the Lower Reach of the Ship Canal for invasive species control has escalated to include the operation of two barriers, not just one, and the repeated use of piscicides to further control fish encroachment and allow more frequent maintenance of the electric barriers. We believe that these operations, combined with managing water quality at current conditions, are an important, and currently overlooked, designated use of the Lower Reach of the Ship Canal. In addition, we believe that inattention to this use or

unintended consequences from upgrading the aquatic use could reduce the effectiveness of invasive species control to prevent detrimental impacts to Lake Michigan. It would not be wise to discontinue these activities - or "use" of the Lower Ship Canal - in the foreseeable future.

Human-Caused Condition: Invasive Species Prevention and Control

The Great Lakes Basin, the largest freshwater watershed in the world, also supports the most taxonomically invaded temperate freshwater ecosystem in the world (Mills et al. 1993). Previous invasions of alewife (Miller 1957), sea lamprey (Lawrie 1970) and more recent introductions of zebra mussels (Griffiths et al. 1991) and Eurasian ruffe (Pratt et al. 1992) represent but a fraction of the non-native biomass that have invaded this system, with significant ecological and economic impacts. These introductions, and their recognized consequences, have been a major driver for federal, state and transboundary actions that have been implemented to prevent future invasions of non-native species into the Great Lakes and to address the ecological and economic impacts of those that have already become established. To this end, the Great Lakes Fisheries Commission receives approximately $12 million annually from both the U.S. Department of State (State) and Canada for many years address invasive species issues affecting the Basin.

Strategies selected to prevent invasions of non-native species into the Great Lakes, such as Asian carp, include the electric barrier and the piscicide rotenone. An electric barrier at Romeoville, IL became operational in 2002 and provided an electrical field within the Ship Canal, through which fish will not pass. Additional electric barriers within the CAWS have since been installed to specifically prevent migration of to and from Lake Michigan of invasive species and allow for continuous deterrence within the CAWS during periods of maintenance. Directed funding through the State Department, through the US Army Corps of Engineers and through other state

funding supports the construction and maintenance of the second electrical barrier in the Lower Reach of the Ship Canal. The main objective of the funding of this barrier is preventing the potential spread of Asian carp into the Great Lakes system. The implementation of these strategic measures is in keeping with the broad recognition of the harm invasive species cause and is causing to the Great Lakes Basin, and is wholly consistent with the provisions of the National Invasive Species Management Plan, as mandated by Executive Order 13112. That Executive Order expressly directs federal efforts to prevent, control and minimize invasive species and their impacts (NISC 2008).

Recognition of the ecological and economic harm created by Asian carp established in the Mississippi and Illinois drainages highlights the need to assert maximum efforts to prevent the spread of the Asian carp into the Great Lakes, and thorough risk assessments have detailed the potential consequences of their introduction into the Great Lakes *(see:* http://www.fws.gov/contaminants/OtherDocuments/ ACBSRAFinalReport2005.pdf). Transboundary cooperation with Canada over this issue has heretofore been successful at minimizing the potential for spread, with recognition that invasive species can be interpreted as 'biological pollutants' under the Boundary Waters Treaty between the U.S. and Canada.

It is important that the State of Illinois and other agencies continue to support prevention of invasive species from migrating into Lake Michigan via the Ship Canal. Factors specific to the control of Asian carp in the Ship Canal include the following summary of recommendations and excerpts from the American Fisheries Society and the Asian Carp Regional Coordinating Committee (see: http://www.asiancarp.org):

- The installation of the electronic barrier in the CSSC demonstrates an understanding "that the artificial connection—known as the Chicago Waterway System—connects the Great

Lakes to the Illinois River, which connects to the Mississippi River. This waterway system provides the pathway for Asian carp to enter the Great Lakes".

- Asian carp consume plankton—algae and other microscopic organisms—stripping the food web of the key source of food for other small and big fish. Asian carp can grow to large sizes and a carp is capable of eating 5 to 20% of its body weight each day. Asian carp often compete directly with native fish. Their diet overlaps with native fishes in the Mississippi and Illinois Rivers.
- Between 1991 and 2000, as scientists watched the Asian carp spread in the Mississippi and Illinois Rivers, Asian carp abundances surged exponentially (Chick and Pegg 2001). Between 1994 and 1997, for instance, commercial catch of bighead carp in the Mississippi River increased from 5.5 tons to 55 tons (Chick and Pegg 2001). The commercial value of Asian carp is quite low and much less valuable than the native fish they replaced.

Not only are Asian carp consuming the aquatic resources in the Illinois River system, they would appear to pose a threat to the Great Lakes, according to the Coordinating Committee. The Committee notes:

- The presence of Asian carp in the Great Lakes could cause declines in abundances of native fish species. Asian carp will compete with native fish for food—native fish like ciscos, bloaters, and yellow perch, which in turn, are fed upon by predator species including lake trout and walleye (Hansen 2010). Under the conditions found in some areas of the Great Lakes (such as water temperature and food abundance), Asian carp could outnumber all other native species, as is happening in parts of Illinois, Mississippi, and Missouri Rivers.
- The Great Lakes may offer the carp an abundant and varied food supply in portions of the Lakes. Bighead carp would consume zooplankton in the Great Lakes and silver carp would prey heavily on phytoplankton. This feeding could place the carp in direct competition with young and mature native species (Hansen 2010). More troubling is that Asian carp appear to be highly opportunistic when it comes to feeding. For instance, bighead carp diet in the Mississippi River is more varied than in their native range, showing the carp take advantage of the food that is present. By feeding on plankton, the Asian carp feed on the "low end" of the food web, and few people doubt that the carp would have significant negative impacts on the food web (Hansen 2010; Lodge 2010).
- Risk assessments carried out by officials from the U.S. Department of Interior (Kolar et al. 2005) and the Department of Fisheries and Oceans Canada (Mandrak and Cudmore 2004), indicate that the carp could tolerate the Great Lakes basin's climate, as the basin is well within the fishes' native climate range. Mean annual air temperatures range between -2°C and 22°C for bighead carp and -6°C and 24°C for silver carp, a temperature span that would support Asian carp populations in much of the United States and Canada, including the Great Lakes.
- The Great Lakes may also offer the Asian carp suitable spawning habitat. The risk assessments show that the Asian carp require 30-60 miles of unimpeded rivers to spawn (Kolar et al. 2005; Mandrak and Cudmore 2004). The carp also thrive in areas with

vegetated shorelines; areas that provide habitat for feeding. The Great Lakes basin contains numerous streams with suitable spawning habitat and large areas of vegetated shorelines, particularly large bays, wide river mouths, connecting channels (e.g., the Saint Marys River), wetlands, and lentic areas (areas of still waters). Ample habitat for spawning and feeding exists in all five of the Great Lakes, including Lake Superior.

Moreover, the Committee notes that ecologically there are several facets of Asian carp that confound typical control strategies including (see http://www.asiancarp.org/faq.asp):

- There are few North American fishes large enough to eat an adult Asian carp. White pelicans and eagles, however, have been seen feeding on juvenile or smaller adult Asian carps. Largemouth bass have often been observed feeding on small juvenile Asian carps, and many other native predators probably also feed on them before they grow too large. Asian carps produce many offspring which grow quickly and if conditions are good, they rapidly become too large to be eaten by North American predators.
- If Asian carp do get into the Great Lakes, there is also a potential that they adapt to the local food system and availability, shorter rivers for spawning, and other detrimental behavior as yet unforeseen.
- The CSSC is a manmade waterway that provides a direct connection between the Mississippi River system and Lake Michigan. Measures are being taken to prevent Asian carp from passing through the system.
- Other points of possible entry to the CSSC which are above the electric barrier are the low lying areas of land positioned between the Des Plaines River, and the Illinois and Michigan (I&M) Canal. During heavy rainfall events, these areas are prone to flooding. A significant rain could flood the banks, joining the Des Plaines with the CSSC or the I&M Canal with the CSSC, and allowing these fish to bypass the barrier and advance toward Lake Michigan. Construction of interim measures to address potential bypass of the barriers via the Des Plaines River and I&M Canal have recently been completed. The U.S. Army Corps of Engineers and others are continuing to investigate potential solutions to all bypass issues.
- Rotenone, a piscicide, is being used in some circumstances in the Chicago Area Waterway System as a tool for Rapid Response against Asian carp. The use of rotenone provides the highest level of certainty that Asian carp will not advance past the electric barrier while it is shut down temporarily for routine maintenance. Traditional fishing gear may not work. Silver carp are very good at avoiding nets and the extensive navigational traffic in the canal makes using nets for bighead carp ineffective. Nets would not remove all the fish and may miss the juveniles, which are of particular concern. The International Joint Commission funded an Asian carp sensitivity project at the U.S. Geological Survey Laboratory in Columbia, Missouri. Researchers determined that Asian carp are more sensitive to rotenone than to other piscicide chemicals that were tested.
- The electrical barrier is currently the best tool to stop large-scale movement of Asian carp from the Illinois River into the Great Lakes via the Chicago Sanitary and Ship Canal and tests conducted to date indicate the barriers are effective at deterring Asian carp. Without the electrical barrier system in place, Asian carp and other fish would have an unimpeded

> pathway from the Mississippi basin to the Great Lakes and vice versa. Though the barriers are very efficient, they are not immune to failures or disruptions in their electric fields. Some scientists and managers, therefore, believe that the electrical barrier is part, but not all, of the solution to keeping Asian carp out of the Great Lakes and other species from transferring into either basin.

The installation in 2002 (and later expansion) of the invasive species dispersal barrier in the Lower Reach of the Ship Canal to prevent passage of Asian carp and other similar invasive species to Lake Michigan and the Great Lakes system reflects of the recognition of US-Canada Boundary Waters Treaty implications and the state mandate and regional interest to protect Lake Michigan and the Great Lakes designated use and resources. The deterrent of Asian carp to Lake Michigan in the Lower Reach of the Ship Canal is an existing use, whether or not it is recognized in the water quality standards. While the installation and presence of the electrical fish barrier has been recognized as a mechanism that cannot support a recreational use within the lower reach of the Ship Canal (as shown by a inclusion of "non-recreational waters" in proposed Section 302.402 and CSSC identified in Section 303.227), the prevention of invasion of invasive species has not been similarly recognized.

It is the recommendation of Environ that the Board should recognize the design and operation of invasive species controls as:

1. A mechanism that prevents support for an upgraded designated aquatic life use,
2. A recognized designated use for the Lower Reach of the Ship Canal, specifically through operation of electrical barriers to deter migration of Asian carp to the Great Lakes, and use of piscicides to allow maintenance of the barriers, and
3. Discontinued use of electrical barriers and piscicides would cause more systemwide environmental damage than leaving them in-place.

In our evaluation of the human-caused conditions (use of electric barrier and piscicides) preventing an upgrade of aquatic life use designation, it is easy to establish that if these

conditions were "remedied"[2](i.e., the fish barrier were removed and no use were made of piscicides to prevent the spread of invasive species), there would be significant damage not only to aquatic life is in the Lower Reach of the Ship Canal, but also to Lake Michigan due to the introduction of Asian carp. However, another remedy - to allow an upgrade to aquatic life use designation from current designation to Aquatic Life Use B - would result in improvements of habitat and water quality conditions that are also related to human-caused conditions. Remedies to improve human-caused conditions (i.e. the introduction of Asian carp into the Mississippi and Illinois River Systems and the consequential efforts to stop their migration to Lake Michigan) would cause more environmental damage to correct as those remedies relate to the intended operation of the Lower Reach of the Ship Canal for invasive species control.

Efforts in support of preventing Asian Carp and other invasive fish species from entering the Great Lakes system include strategies that prevent or minimize conditions that would attract or be favorable to the target species. Available habitat and food resources are two key factors that often allow invasive species to become established. The actions that prevent or minimize available habitat and food resources to the Asian carp within the Lower Reach will support the use of invasive species control and prevention of their migration upstream. The biological habitat of the Lower Reach is poor and considered irreversible because of navigation use and flood control severely limit habitat improvement options. Within sections of the Lower Reach where habitat improvement can take place, the anticipated effects are considered negligible with respect to benefits to the fishery based on the 2010 report by the District.

Conversely, improvements in the aquatic habitat are self-defeating due to Asian carp. They are primarily water column feeders where algae, zooplankton typically occur, and where migrating

[2] As used in this testimony, remedy is as discussed in support of 40 CFR 131.10(g)(3)

or re-suspended benthic macroinvertebrates or micro-crustaceans may occur. One of the threats to the Great Lakes is the potential for Asian carp to displace existing species by crowding and outcompeting them for planktonic food resources to a level that may be detrimental to the entire food web. Actions that prevent or minimize available food resources of the Asian Carp within the Lower Reach would support the use of invasive species control. Such actions could include habitat instream and shoreline habitat improvement. Since the implementation of the habitat improvement options in the Lower Reach was judged to have negligible benefit to the resident fishery, it is suggested that no habitat improvement options be implemented that would increase the reproduction or presence of algae and macroinvertebrates from existing conditions.

Similarly, water quality standards that may be more protective of aquatic life may benefit the plankton species and enhance the food resource and act as an attractant for Asian carp. Additional Asian carp in the Lower Reach would likely be detrimental to the resident fish populations, and is counter to the goal of invasive species control. One example is the proposed change in copper criteria from 1.0 mg/L (support of Indigenous Species stream classification) to a value of 0.36 mg/L (acute) and 0.022 mg/L (chronic) in support of Aquatic Life Use B waters (calculated using an average hardness value of 260 mg/L for Lower Reach). For derivation of the Illinois copper criteria, the four organisms most sensitive to toxic effects are all invertebrates and include the cladocerans *Ceriodaphnia reticulata* (first), followed by *Daphnia pulicaria, D. pulex*, and *D. magna* as a group; the amphipod *Gammarus pseudolimnaeus*; and then the bryozoans (*Plumatella emarginata* and *Lophopodella cartera*). All of these organisms are potential plankton and select food resource for Asian carp that currently may or may not exist in the Lower Reach. Copper is just one example where the current water quality criteria change under the proposed upgrade to Aquatic Life Use B, and the basis for the lowering of criteria is

driven by protecting planktonic species. Changing water quality so that the water conditions could accommodate a more productive plankton community could create a more abundant food source available to Asian carp, hence the Lower Reach of the Ship Canal water quality could be an attractant to an invasive and nuisance species. The point here is not to ignore protection and support of aquatic life in the Lower Reach, but to minimize conditions that would attract the Asian carp; minimize conditions that would benefit growth and reproduction of Asian carp; and maximize conditions that enhance the effectiveness of the invasive species barrier strategies.

ENVIRON recommends that control measures for the prevention of the passing of invasive species or control of invasive species migration should be recognized as a designated use for the Lower Reach of the Ship Canal. This designated use should be recognized in the Illinois regulations for water quality standards. In a systemwide approach to the Great Lakes, this designated use in the CAWS is in full support of the intent of the Clean Water Act goals.

SUMMARY

ENVIRON strongly recommends that the IEPA and IPCB re-evaluate the UAA factors specific to the Lower Reach of the Ship Canal utilizing data and information that has evolved since 2007. ENVIRON, in evaluating the data and information available in support of UAA Factor 5, Physical Conditions, Factor 4, Hydrologic Modification, and Factor 3, Human-caused Conditions, finds that the design and operation of the Lower Reach of the Ship Canal for navigation, flood control, conveyance of waters away from Lake Michigan, and invasive species control impact the aquatic life use attainable for the Lower Reach of the Ship Canal. In addition, the aquatic life limitations created by the design and operation of the Lower Reach of the Ship Canal are irreversible, Therefore, "remedies" are limited and would not result in aquatic life conditions to support an upgraded designated use. Moreover, a potential remedy of improving

water quality could contribute to systemwide detrimental aquatic impacts by creating conditions counter to mandatory invasive species control. ENVIRON, on behalf of Citgo Lemont Refinery, recommends that the current designated aquatic life use is appropriate for the Lower Reach and that upgrading the designated use to the proposed Aquatic Life Use B is not warranted or supported.

Thank you, this concludes my pre-filed testimony.

Robin L. Garibay

Robin L. Garibay, October 8, 2010

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CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 8th day of October, 2010, I have served electronically the attached Pre-Filed Testimony of Robin L. Garibay, accompanying Attachments, and Notice of Filing upon the following person:

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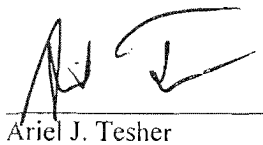

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ATTACHMENT 1

Jeffrey P. Fisher, PhD

EDUCATION

1996	Postdoctoral Research Associate, University of Connecticut, Department of Natural Resources Management and Engineering
1995	PhD Ecotoxicology, Department of Avian & Aquatic Animal Medicine, Cornell University
1990	MSc, Aquatic Pathobiology, Inst. of Aquaculture, Stirling University, Scotland
1985	BS, Fisheries Biology/Aquatic Ecology, University of Washington

REGISTRATIONS & CERTIFICATIONS

Certified Erosion Control Lead, Washington State Department of Ecology, 2007

Certified Fisheries Professional, American Fisheries Professional, 2000

Certified Washington DNR Fish Habitat, Riparian and Water Quality Analyst, 1997

PADI Scuba, Open Water, Medic, Night and Rescue Certifications, 1983

EXPERIENCE

Dr. Jeffrey Fisher is a Principal at ENVIRON Corporation. He is a fisheries biologist and ecotoxicologist with 22 years of experience examining physical, chemical, and biological impacts on aquatic animals, and aquatic ecosystem function. He leads ENVIRON's operations in the Pacific Northwest and is a key member of the firm's core natural resource and ecotoxicological services group. Prior to joining ENVIRON, Jeff completed a 2-year sabbatical posting to the US Department of State, Bureau of Oceans and International Affairs, as an American Association for the Advancement of Science Fellow, where he oversaw the invasive species portfolio and represented State on the Aquatic Nuisance Species Task Force and National Invasive Species Council. He serves both public and private clients in addressing complicated natural resource management and toxicology-related issues associated with NRDA, CERCLA, RCRA, TSCA, FERC, NEPA and ESA compliance requirements. Some of Jeff's more significant consulting and research projects are summarized below.

- Recently performed fish necropsies and provided Principal field oversight for study to ascertain tissue-specific selenium concentrations in ovarian and whole body fish tissue from a variety of warm water fishes from Zekiah swamp in southern Maryland. The purpose of the study is to establish tissue-residue based selenium water quality criteria for a reach of stream potentially impacted by elevated selenium from fly-ash leachate.
- Provided technical review of watershed analysis methods designed for the prototype analysis required under a Habitat Conservation Plan for the Pacific Lumber Company in Scotia, CA. Co-authored the Fish Habitat Module methods, and co-developed the turbidity analysis methods for inclusion into the manual. Conducted the turbidity and suspended sediment risk assessment for the Freshwater Creek watershed analysis..
- Served as expert witness (deposition) for plaintiffs in class action suit against refinery. Evaluated aquatic biological risks associated with the discharge of groundwater contaminated with polycyclic aromatic hydrocarbons into the North Platte River. Based on evidence provided that indicated potential risks from the estimated environmental concentrations, the case was settled out of court.

- Served as expert witness for Taylor Shellfish, the largest shellfish grower on the West Coast, for a land use action dispute with neighbors regarding their operations on tidelands leosed by them from another neighbor. Conducted field studies to evaluate suspended sediment risks from geoduck harvests, impacts on benthic infauna and epifauna, and fish communities to support my testimony. Largely as a result of my testimony regarding the benign, and largely beneficial effects of the operations on basin water quality and habitat enhancement/creation, the case was dismissed by the hearing examiner.
- Served as project manager and lead scientist for the City of Tacoman on a project evaluating ecological and human health risks associated with dioxin-contaminated sediments in Commencement Bay. The project goal was to identify appropriate risk-based sediment guidelines for clean-up of the habitat restoration site.
- Served as Project Manager and lead author in conducting an extensive analysis of the fisheries and water quality benefits and impacts from the proposed Black Rock Reservoir in the Black Rock Valley of central Washington State. The analysis focused on storage opportunities within the valley, and the benefits and potential impacts to water quality and anadromous and resident fisheries resources of the Columbia and Yakima Rivers that could potentially follow from several proposed options for a pump-driven withdrawal from the Columbia River, and an interbasin transfer of these waters for irrigation into the Yakima Valley. Examined: (1) potential impacts from a variety of different intake locations and fish screening options, (2) potential changes to wetted usable area in the Yakima River using channel cross-sectional data from the USGS, (3) the potential for interbasin transfer of fish pathogens and hazardous materials into the Yakima basin, and (4) the temporal benefits and impacts to aquatic habitat in the Columbia River based on the potential locations and timing for withdrawal. Based on these analyses, it was concluded that stream temperatures in the Yakima River could be improved for anadromous fishes with several of the (bottom) withdrawal options, and that a near-normative hydrograph could be potentially restored in the Yakima River. Based primarily on the wetted perimeter analysis, significant extensions of spawning and rearing habitat for fall and spring Chinook salmon were considered highly probable, with additional potential for dismantling existing storage at the headwaters of the Cle Elum River, possibly permitting the reintroduction of extirpated sockeye salmon. Based on the value of the sport fish harvest alone, an improvement in the river fishery was estimated to provide a net annual economic benefit of 1 to 4 million dollars. Fishery benefits from the created reservoir were estimated to provide an additional gross economic benefit of over $3 million.
- Managed large-scale project to ascertain risks to aquatic ecological receptors exposed to arsenic and mercury-laden mine tailings following the breach of a tailings retention dam near the Sawtooth Wilderness Area of Idaho, as part of Superfund (CERCLA) driven response action. Field studies to support the baseline risk assessment included an evaluation of macroinvertebrate diversity and abundance; fish diversity, abundance and health; surface-water chemistry; sediment chemistry; and an evaluation of the physical habitat conditions associated with the site using the Washington State methods for watershed analysis, and instream flow incremental methodology (IFIM) to evaluate flow versus habitat relationships. Reduced trout densities in the tailings depositional zone were found to be the result of deficient habitat factors and not chemical contamination in this case. EPA concurred with these findings.
- Serving as principal consultant supporting the US Army Corps of Engineers in evaluating the environmental impacts and benefits associated with shellfish culture operations, for the ongoing ESA consultation on NWP 48 for WA, OR and CA.

- Evaluated potential impacts to the Topeka Shiner Minnow listed under the ESA from routine irrigation canal maintenance, for a consortium of Iowa drainage districts.
- Evaluating nutrient and carbon mitigation opportunities from shellfish for the Pacific Coast Shellfish Growers Association.
- Evaluated potential impacts of intertidal geoduck clam aquaculture, as practiced by a consortium of growers in Puget Sound, to address Endangered Species Act (ESA) compliance issues.
- Evaluated potential impacts of expanding a floating upwelling nursery unit for oysters in southern Puget Sound. Conducted survey dives beneath the existing facility and expansion zone to address existing biodiversity and consider potential impacts from shading for Section 7 ESA compliance.
- Assessed biological significance of relocating treated sewage outfall, and reviewed mixing zone analysis for its ability to protect ESA-listed salmonids. Drafted Biological Assessments for Section 7 ESA compliance. Designed off-channel fish habitat and wetland restoration plan along the upper Yakima River to mitigate for the construction of an in-river rock-drop and trench box associated with a surface water withdrawal. Examined flow vs. habitat relationship. Developed mitigation plan that involved the breaching of the dike in two locations, the construction of an off-channel oxbow, and the routing of the channel into an existing flood-channel.
- Addressed DEIS comments and concerns of agencies and the public regarding the proposed expansion of a rock quarry owned by Cadman Inc. in the Snoqualmie River valley through applied research. Multiple reaches within seven surface drainages on or near the quarry were evaluated for potential impacts from the proposed expansion. Fish abundance, physical habitat, flow and fish passage barriers were surveyed in seven area streams and ponds on and near the project site, in accordance with Washington Forest Practices Guidelines for watershed analysis. Evaluated flow and habitat relationships in select drainages for potential mitigation opportunities.
- Provided technical support to the Bureau of Indian Affairs (BIA) and Office of the Solicitor in the FERC relicensing of the Pelton-Round Butte Hydroelectric Project (Project). Reviewed studies completed by the applicant, Portland General Electric (Applicant) and assisted the BIA in the development of appropriate Section 4(e) conditions. The BIA was concerned that insufficient attention was being paid to downstream habitat potentially affected by project flows. To investigate the effects on downstream anadromous steelhead and Chinook salmon, an instream flow investigation was used to define the needs of anadromous fish in this portion of the Deschutes River.
- Provided technical and strategic support to PacifiCorp (Scottish Power) for their FERC relicensing of the Prospect 1, 2, and 4 Hydroelectric Project on the Rogue River in Oregon. The focus of the multi-year project was to evaluate fisheries impacts on three forks of the Rogue River. Jeff participated in the data collection, analysis, reporting and collaboration with stakeholders. Some of the key studies included: 1.) Instream flow using PHABSIM modeling were conducted to determine minimum flow requirements for fish. In support of this work, fish distribution, abundance, condition, and habitat studies were conducted along transects representing the range of geomorphic conditions within the reaches affected by flow regulation.
- Managed the toxicity, human health and ecological risk assessment of the use of rotenone to eradicate northern pike from Lake Davis, California as part of a comprehensive EIS/CEQA environmental impact study conducted for the California Department of Fish and Game.

- Managed and authored ecological risk assessment for the modeling of risks to estuarine organisms from the use of the herbicide imazapyr (Arsenal) to control invasive *Spartina* for the Washington State Department of Agriculture. The assessment also addressed risks to ESA-listed species throughout the estuarine areas where *Spartina* was found. The results of the assessment led to the acceptance of the safety of the herbicide for the intended application and has resulted in over a 50 percent reduction in the incidence of the invasive plant in just three years.
- Managed and authored biological assessments in accordance with Section 7 compliance requirements of the Endangered Species Act to address impacts from projects related to transportation improvements, port expansion, shellfish culture, wastewater treatment outfall placement, surface water withdrawal, stormwater discharge and other issues. Project sponsors have included private, government and tribal entities.
- Evaluated the ecological risks and developed natural resource damage assessment following spill of fire retardant in tributary of the Okanogan River that supports ESA-listed steelhead trout and chinook salmon.
- Conducted ecological risk assessment to address potential sediment-associated effects of mercury and PAH contamination in a contaminated estuary of San Francisco Bay for Chevron, as part of NRDA negotiations. Modeled the potential ecological risks to salt-marsh associated biota, fish, and marine invertebrates; risks to select terrestrial biota were examined through a food web model.
- Authored ESA-driven biological assessment of a proposed stormwater discharge into the Puyallup River from the Cascade Pole and Lumber wood treatment facility in Tacoma, WA. Principal contaminants of concern to ESA-listed salmon included copper, chromium and arsenic.
- Assisted negotiations on transboundary ecological issues associated with mine waste impacts to Lake Roosevelt (WA) sturgeon and other fisheries resources, and on the potential introduction of invasive species into Canada via the Red River, from a proposed outlet in Devils Lake, ND.

Prior to joining ENVIRON, Jeff held the following positions:

ENTRIX, Inc., Senior Fisheries Biologist Biologist & Ecotoxicologist; Olympia, WA

AAAS Science and Technology Policy Fellow—Foreign Service Environmental Science Officer, U.S. Department of State

Pentec Environmental, Senior Aquatic Biologist & EcoRisk Assessor; Edmonds, WA

Puget Sound Christian College, Adjunct Professor of Biology

U. of Connecticut., Dept. of Natural Resources, Wildlife Conservation Research Center, Postdoctoral Research Associate; Storrs, CT

NY Dept. of Health, Division of Environmental Disorders, Postdoctoral Research Associate; Albany, NY

Cornell U., Dept. Avian & Aquatic Animal Med., Grad. Res. Assoc.; Ithaca, NY

Eastern Connecticut State U., Research Assistant; Inst. of Marine & Aqua. Studies, Willimantic, CT

Stillaguamish Tribal Fisheries Dept., Hatchery Manager/Fisheries Enhancement Biologist; Arlington, WA

National Marine Fisheries Service, Foreign Fisheries Observer Program, Seattle, Washington

Fisheries Research Institute, U. of Washington, Fisheries Technician; Seattle, WA

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ADDITIONAL TRAINING

Foreign Service Institute: (1) "Communicating Across Cultures", (2) "Explaining America", (3) "Early Morning Spanish", 2004

University of Florida, Advanced Aquatic Animal Medicine, 2003

Colorado State University: Wildland Water Quality Monitoring, 1986

Woods Hole, MBL: Aqua-Vet II: Advanced Aquatic Animal Medicine, 1991

AWARDS AND HONORS

AAAS, Science & Technology Policy Diplomacy Fellow, 2003-2005

Most Significant Paper, Journal of Aquatic Animal Health, Volume 7

Honorable Mention, Most Significant Paper, Trans. of the American Fisheries Society, Vol.126

Sea Grant Scholar, 1996

Charles Stewart Mott Foundation Predoctoral Fellow, 1992-1993

NIEHS Toxicology Training Grant Recipient, 1989-1992; 1994-1995

PROFESSIONAL AFFILIATIONS & ACTIVITIES

American Fisheries Society—Former Chair of AFS Western Division environmental concern committee.

Society of Environmental Toxicology and Chemistry (SETAC)

American Association for the Advancement of Science (AAAS)

Society of Ecological Restoration

PUBLICATIONS AND PRESENTATIONS

Peer-Reviewed Journal Publications

Cohen, J.B., J.S. Barclay, A.R. Major, and J.P. Fisher. 2000. Greater scaup as bioindicators of metal contamination at national wildlife refuges in the Long Island Sound region. Archives of Environmental Contamination and Toxicology 38: 83-92.

G.A. Wooster, P. Bowser, J. P. Fisher and S. Brown. 2000. Remediation of Cayuga Syndrome in Landlocked Atlantic Salmon Salmo salar using egg and sac-fry bath treatments of thiamine hydrochloride. Journal of the World Aquaculture Society. 31:2:149-157.

Butler B.J., J.S. Borclay, and J.P. Fisher. 1999. Plant communities and flora of Robins Island, New York. Journal of the Torrey Botanical Society 126:63-76.

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Fisher, J.P., S.B. Brown, S. Connelly, T. Chiotti, and C.C. Krueger. 1998. Interspecies comparisons of blood thiamine in salmonids from the Finger Lakes, and effect of maternal size on blood and egg thiamine in Atlantic salmon with and without Cayuga syndrome. American Fisheries Society Symposium 21:112-123, Bethesda, Maryland.

Fisher, J.P., J.D. Fitzsimons, G.F. Combs Jr., and J.M. Spitsbergen. 1996. Naturally occurring thiamine deficiency causing reproductive failure in Finger Lakes Atlantic salmon and Great Lakes lake trout. Transactions of the American Fisheries Society 125:167-178. Honorable mention: Most Significant Paper of 1996, American Fisheries Society.

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Ostrander, G.K., J.J. Anderson, J.P. Fisher, M.L. Landolt, and R.M. Kocan. 1990. Decreased performance of rainbow trout (Oncorhynchus mykiss) emergence behaviors following embryonic exposure to benzo(a)pyrene. Fishery Bulletin 88(3):551-555.

Peer Reviewed Book Chapters, Proceedings, and Editorial Works

Mendoza, R., Fisher, J.P. and 16 additional authors. 2009. Trinational Risk Assessment Guidelines for Aquatic Alien Invasive Species: Test cases for the Snakeheads (Channidae) and Armored Catfishes (Loricariidae) in North American Inland Waters. Commission for Environmental Cooperation. Fisher, J.P. (ed.) ISBN 978-2-923358-60-4.

Fisher, J.P. 2005. An overview of international initiatives addressing invasive species. In: "Building Capacity to combat impacts of aquatic invasive alien species and associated trans-boundary pathogens in ASEAN countries. Penang, Malaysia, July 12-16. M. Phillips, P. Bueno, J. Fisher, and M. Reantaso (eds.).

Fisher, J.P. 2005. Addressing invasive species in the environmental cooperation mechanisms of free trade agreements. In, "Facilitating Safer US-Caribbean Trade: Invasive Species Issues. Port of Spain, Trinidad, June 2-4, 2004. C. Davis & W. Claussen (eds). .

Simpson, A., E. Sellers, and J. Fisher (eds.). 2004. "Experts meeting toward the implementation of a global invasive species information network." Baltimore, MD. April 5-8.

Fisher, J.P. 2004. Final U.S. Position Paper Agenda Item 6.1 (UNEP/CBD/BS/COP-MOPO/1/4. Procedures and Mechanisms for Facilitating Decision-Making By Parties of Import (Article 10 paragraph 7)

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Robin L. Garibay, REM

EDUCATION

1980	BA, Biochemistry, Rice University
1983	Graduate Studies, Plant Physiology, Texas A & M University

REGISTRATIONS & CERTIFICATIONS

Registered Environmental Manager No. 7599

EXPERIENCE

A Principal in ENVIRON's Arlington, Virginia, location, Ms. Garibay has over 25 years of experience in wastewater and water quality management issues, particularly activities in support of strategic planning for facility changes and permitting, complaince planning, and providing technical advocacy in wastewater and water quality rulemaking.

Ms. Garibay's specific expertise includes water quality criteria development, watershed and facility source surveys, fate and effects studies, bioavailability assessments, toxicity reduction evaluations, removal credit applications, antidegradation demonstrations, variance requests, strategic planning for operationol changes, and permit negotiations.

Highlights of her project experience follow:

- Review implementation of regulations by participating in work groups, and commenting on water quality and wastewater-related guidance documents and methods, policy directives, compliance costs, and technical databases.
- Participated in stakeholder work groups in Illinois, Indiana, West Virginia, and Wisconsin on various regulatory issues including adoption of GLI rules, establishment of anti-degradation rules and procedures, development of TMDLs, creation of statewide mercury variance rules, and derivation of site-specific water quality criteria.
- Directed sampling and analytical tasks for the chemical identification, mixing zone delineation studies, assimilative capacity studies, reviews of toxicology and fate information to determine environmental risks, preparation of sampling and analysis plans for CWA and RCRA activities.
- Preparation of 404 Applications, 401 Certifications, CZM Applications, NPDES Permit Applications, IU Permit Applications, Land Application Permit Applications, and Plans in support of BMP, PMP, SWP3, SPCC and/or FRP.
- Directing and conducting in-plant sewer source surveys and development of water and mass balances.
- Assistance in wastewater management audits and wastewater management training

Ms. Garibay has significant experience consulting with iron and steel mills, petroleum refineries, pulp and paper manufacturers, organic chemical manufacturers, power generation stations, food manufacturing, and industrial trade associations.

Previous experience includes the analysis of formulations and groundwater samples for pesticide identity and serving on an agricultural chemicals and groundwater task force for the development of a groundwater protection act and chemigation rule.

Exhibit G

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	R08-9
CHICAGO AREA WATERWAY SYSTEM	)	(Rulemaking-Water)
AND THE LOWER DES PLAINES RIVER:	)	
Adm. Code Parts 301, 302, 303 and 304	)	(Subdocket C)

NOTICE OF FILING

To: John Therriault, Clerk
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Persons included on the attached
SERVICE LIST

Please take notice that on February 2, 2011, we filed electronically with the Office of the Clerk of the Illinois Pollution Control Board the attached Pre-Filed Testimony of James E. Huff, P.E. and accompanying Attachments, a copy of which is served upon you.

CITGO PETROLEUM CORPORATION, and
PDV MIDWEST, LLC, Petitioners

By: _____
One of Its Attorneys

Jeffrey C. Fort
Ariel J. Tesher
SNR Denton US LLP
233 S. Wacker Drive
Suite 7800
Chicago, IL 60606-6404

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	R08-9
CHICAGO AREA WATERWAY SYSTEM	)	(Rulemaking-Water)
AND THE LOWER DES PLAINES RIVER:	)	
Adm. Code Parts 301, 302, 303 and 304	)	(Subdocket C)

PRE-FILED TESTIMONY OF JAMES E. HUFF, P.E.

Introduction

My name is James E. Huff, and I am Vice President and part owner of Huff & Huff, Inc., an environmental consulting firm founded in 1979. I have previously testified in this rulemaking on May 6, 2009, prior to its subdivision into subdockets, and a copy of my background is summarized in the pre-filed testimony that accompanied that appearance. This current testimony is a revision of testimony I intended to give at the series hearings which began on November 8, 2010. In response to a motion by the Illinois Environmental Protection Agency (the "Agency"), stakeholders to this proceeding agreed on October 28, 2010 to move my testimony to a later date. *See* Hearing Officer Order, October 28, 2010, R08-9(C) (Rulemaking - Water).

I have been retained by the Lemont Refinery to review the Aquatic Life Use designation proposed by the Agency for their reach of the Chicago Sanitary & Ship Canal (the "Ship Canal") downstream of the Calumet-Sag Channel confluence (the "Lower Ship Canal") and the technical justification provided by the Agency in support of its proposed Aquatic Life Use designation. I have actively followed the UAA proceedings before the Board. I have also evaluated the impact that the proposed use designation will have on the Lemont Refinery. My prior testimony also focused on the uses of the Ship Canal; my testimony here focuses on the Lower Ship Canal and

to highlight the use of that segment for snow melt runoff and the protection from invasive species.

The collection of waterways currently under consideration represents a range of dissimilar waterways, from natural streams to manmade canals. To some extent, the Agency's proposed changes recognize these differences in two different use categories, as Use A and Use B. My review was focused on the appropriateness of Use B designation for the Lower Ship Canal.

The Lemont Refinery discharges into the Lower Ship Canal. At the point of its discharge, the Lower Ship Canal can be described - as the Agency has stated - as an "effluent dominated" waterway. The uses of the Lower Ship Canal are demonstrably different than the use of the other bodies of water in the Chicago Area Water System ("CAWS") and in this Use Attainability Analysis proceeding.

The Agency is proposing to group the Lower Ship Canal as an Aquatic Life Use B Water, a group that also includes the North Branch Chicago River, the Chicago River, South Branch Chicago River, the Calumet River to Torrence Avenue, the Lake Calumet Connecting Channel, and the Lower Des Plaines River from the Lower Ship Canal to the Brandon Road Lock and Dam. With the exception of the Lake Calumet Connecting Channel and the Lower Ship Canal, all of the waterways in this group are natural waterways. A proper consideration of the uniqueness of the artificially created and physically constrained Lower Ship Canal is lost by including it in this grouping. Aquatic Life Use B Waters are, "capable of maintaining aquatic life populations predominated by individuals of tolerant types that are adaptive to the unique physical conditions, flow patterns, and operational controls designed to maintain navigational

use, flood control, and drainage functions in deep-draft, steep-walled shipping channels." (Agency's Statement of Reasons, p 49). The Agency has proposed statutory language which sets out the "Purpose" of these Aquatic Life Use B restrictions as protecting "the highest quality aquatic life ... that is attainable..." (Agency proposal for 35 Ill. Adm. Code 302.402.)

The focus of my testimony here is on the chloride and sulfate water quality limits proposed for the Lower Ship Canal. The Lemont Refinery discharge contains sodium sulfate from the recently installed Wet Gas Scrubber used to reduce sulfur dioxide air emissions as well as chlorides removed from the crude oil in the desalting process. Under the Agency's proposal, the chloride water quality standard would be set at 500 mg/L, and at least during periods when the Ship Canal exceeds 500 mg/L, the Lemont Refinery would be restricted to a discharge of 500 mg/L chlorides, which it can not achieve. The sulfate limit is more complicated in that the sulfate water quality standard is based on the chloride concentration; however, sulfate water quality standards are limited to waterways having less than 500 mg/L chlorides, from which one could conclude that no net increase in sulfates is allowed when the receiving stream exceeds 500 mg/L chlorides.

Others have already addressed the unique uses of the Lower Ship Canal for stopping the spread of invasive species such as the Asian Carp from the Illinois River system toward Lake Michigan. As stated later, I would recommend that the Board *not* accept the Agency's proposed upgraded use of this water and not group this waterway with other unrelated waterways in the Use B group. Rather, I suggest the addition of a Use C category which would be comprised of the Regulated Navigation Area surrounding the United States Coast Guard's electric barrier system,

which stretches from River Mile 295.5 to 297.2 (*see* the map at Exhibit A), which recognizes the truly unique use of this waterway. (*See* Exhibit B for proposed regulatory language establishing a Use C.) A Use C designation would properly take into account the exceptional characteristics of these waters. This language is based on the existing regulatory language drafted by the Agency in defining Use B waters with minor alterations to reflect the use of the waters to prevent the migration of invasive species and to take up snowmelt runoff.

Uniqueness of the Lower Ship Canal

As the Agency noted in its Statement of Reasons, "the environmental potential for the river was historically deemed to be limited to the point of hopelessness." (Agency's Statement of Reasons, p 17). The Illinois Pollution Control Board ("Board") has consistently recognized the challenges, variability, and uniqueness of the CAWS and Lower Des Plaines River and many of the same challenges and limitations that the Board recognized in the early 1970s remain valid today. This is particularly true for the Lower Ship Canal.

The Lower Ship Canal is typically 200 to 300 feet. wide with depths greater than 27 feet. (CDM, 2007). The construction of the Lower Ship Canal includes vertical walls and steep embankments. The Lower Ship Canal was completed as part of the greater Ship Canal in 1907 to divert pollutants away from Lake Michigan, the City of Chicago's primary water supply, and it was expanded in 1919 to its present form to increase navigation capabilities and provide additional waste dilution. With the potential exception of the Calumet-Sag Channel, as described later in my testimony, there is no other water body in the CAWS which has the unique physical features, commercial shipping, discharge loadings, and lack of appropriate habitat for

aquatic life. as the Lower Ship Canal. And none are so specifically associated with efforts to control the spread of invasive species.

The aquatic habitat of the Lower Ship Canal is rated as "poor to very poor" (IEPA, 2006). Overall stream use is designated as *non-support* for fish consumption and aquatic life, which does not factor in the electric barrier or the periodic use of rotenone to kill all the fish. The identified causes of impairment were polychlorinated biphenyls (PCBs), iron, oil and grease, dissolved oxygen ("D.O."), total nitrogen, and total phosphorus. Identified sources of the impairment include combined sewer overflows, urban runoff/storm sewers, and impacts from hydrostructure flow regulation/ modification, municipal point source discharges, and other unknown sources.

Stormwater runoff flows into the Lower Ship Canal, carrying with it pollutants from roads, parking lots and other surfaces. In the winter months, this stormwater carries road salt and other chemicals used by the state and municipalities to keep streets, highways and parking lots safe. While there are potential activities to reduce the amount of sodium chloride applied within the basin, there has been no demonstration that these reductions will be sufficient to achieve the proposed chloride water quality standard of 500 mg/L. When de-icing salts cause a spike in the chloride level, the Lemont Refinery loses its mixing zone for chlorides (and sulfates), as the Lower Ship Canal's upstream water quality exceeds the water quality standard for chlorides.

In addition to the stormwater runoff impact, the electric barrier system and rotenone applications on the Lower Ship Canal are particularly unique hazards to aquatic life. Both these hazards, lying within the same reaches of the Lower Ship Canal as the Lemont Refinery, are designed to

create *non-support* conditions for aquatic life so as to prevent invasive species from entering and leaving the Great Lakes. The Agency's proposal to upgrade the aquatic life use designation of the Lower Ship Canal directly conflicts with the local, state, and federal existing use of these waters as a barrier to halt the spread of invasive species. These barriers were authorized by Congress, with the full recognition on the part of federal and state biologists that any positive fish migration in the Lower Ship Canal was being sacrificed to protect the Great Lakes as well as the Mississippi River Basin from aquatic invasive species.

These electric barriers will not only prevent the aquatic invasive species from migrating, but they will also prevent all other fish from migrating up or down the Lower Ship Canal at Lockport, effectively terminating the water body at this point from a biological perspective. Normally, preventing migration is not a desirable outcome, but it is certainly necessary in light of the greater goal of protecting the biological integrity of the Great Lakes and the Mississippi River Basin.

Mixing Zone Implications

Because of the uniqueness of the Lower Ship Canal, a separate use category is appropriate. However, the Agency has proposed strict limits for chlorides and sulfates, essentially proposing standards adopted for General Use waters. While I recognize that Subdocket D will directly address water quality standards and limits, it is important in this Subdocket C to recognize the impact a use designation and the water quality standards which are appropriate for that use designation, will have on the Lower Ship Canal.

Under 35 Ill Adm Code 302.102, mixing zones and Zones of Initial Dilution ("ZIDs") are

allowed, subject to certain restrictions. Section 302.102(b)(9) prohibits mixing zones for constituents where the water quality standard is already violated in the receiving stream. Assuming for the moment that this prohibition only applies during the period of time the receiving water body exceeds a water quality standard, then there will be times during each year when all dischargers adding any chlorides or sulfates will have to meet the water quality standards at the end of pipe. The Agency noted in its Statement of Reasons (p 76) that it expects that there will be violations of the chloride standard during the winter months, yet it offers no solution in its proposal and it does not address at all the loss of mixing zones. It is likely that every discharger on the Lower Ship Canal will be negatively impacted by this loss of mixing zone, with significant economic implications.

Exhibit C presents four years of chloride data from the Lemont Refinery's water intake (which is upstream of its discharge). During the summer and fall months, the chloride levels are typically below 500 mg/L. However during snow melt periods, chloride levels as high as 998 mg/L have been recorded in the Lower Ship Canal. There have been chloride violations every winter/spring recorded in these data. These cold-weather exceedances are attributed to highway and parking lot de-icing runoff. The intense population center (i.e. the City of Chicago and suburban Cook County which are upstream of the Lemont Refinery) on an effluent dominated stream makes achieving a 500 mg/L chloride standard not practicable without drastically changing de-icing practices. Moreover, while ignoring the current uses being made of the Lower Ship Canal, the proposal penalizes the point source dischargers on the Lower Ship Canal.

During periods of elevated chlorides in the waterway, no discharger can contribute any chlorides

or sulfates under the proposed water quality regulations. The Board has already granted variances relating to Total Dissolved Solids to the Lemont Refinery (and changed the water quality standard for TDS for the Exxon-Mobil Refinery) due to the snow-melt phenomenon. Facilities that use once through cooling water would not be allowed to add chlorine (increase in chlorides) to control microbial growth, nor can they add sulfite type compounds to consume any chlorine residual (de-chlorinate) in the discharge. On an effluent dominated stream, chlorinating the incoming water is important to prevent biological growth on the heat exchangers. To discontinue discharging would entail ceasing operations for most industries, which has its own economic ramifications. In addition, new dischargers to the Lower Ship Canal would essentially be limited to operations that did not chlorinate, de-chlorinate, use de-icing salt in the winter, or any process that contributes chlorides or sulfates. I would expect that many existing dischargers would also not be allowed to discharge during periods when the Lower Ship Canal is over 500 mg/L chlorides, as their effluent will also exceed 500 mg/L chlorides during these same periods.

Chloride Reduction Efforts

Excess chlorides in the winter/spring season is not unique to the Lower Ship Canal in Illinois. A considerable effort has gone into education programs to minimize the application of excess de-icing salt. Last year there was a significant spike in salt prices, which provided a larger incentive on users to reduce wastage. What is unique about the Lower Ship Canal is the huge population center upstream. An estimated 270,000 tons of highway salt are applied annually in the Chicago Area. The peak chloride level of 998 mg/L recorded in 2007 would require more than a 50 percent reduction of salt use during the heaviest storm events to achieve a 500 mg/L chloride water quality standard. There are certainly opportunities to reduce highway de-icing salt, but I

am unaware of any study that indicates a 50 percent reduction in salt in the Chicagoland area is technically feasible. The Village of Winnetka has a green vision that has a goal of reducing salt consumption by 30 percent. For major highways, opportunities to reduce salt consumption by this much is unlikely, because salt application is not optional from a safety perspective. In summary, while efforts to reduce salt usage are underway, achievement of a 500 mg/L chloride water quality standard on the Lower Ship Canal is not technically feasible and does not reflect the uses of the Lower Ship Canal.

The Board Should Reject any Upgrade in Water Quality Uses for the Lower Ship Canal

An upgrade of designated water quality uses and associated criteria in the Lower Ship Canal, particularly as it regards TDS, chlorides, or sulfates, is not appropriate. The Lower Ship Canal is used to prevent the spread of invasive species, to carry runoff from de-icing, and for commercial activity vital to the local economy. Even the existing standard of 1,500 mg/L for TDS set out in 35 Ill. Adm. Code 302.407 cannot be met during periods of road salt runoff. As a result, the Board has had to repeatedly grant variances to account for such runoff (*see, e.g.*, PCB 08-33, Opinion and Order, May 15, 2008).

Nonetheless, the Agency seeks to copy most of its General Use water quality standards from 35 Ill. Adm. Code 302.208(e-g) and insert them into a revised 35 Ill. Adm. Code 302.407(e-g).[1]

[1] In at least two instances, , the Agency even seeks to impose *more restrictive* water quality standards on these formerly designated "Secondary Contact" waters than it imposes on the "General Use" waters. The first, temperature, has been discussed at length in these proceedings. The second is the arsenic water quality standard in 302.407(e), which is 340 µg/L for acute standards and 150 µg/L for chronic standards. By comparison, the existing "General Use" arsenic water quality standard in 302.208(e) is 360 µg/L for acute standards and 190 µg/L for chronic standards.

The proposed chloride standard in 35 Ill. Adm. Code 302.407(g) of 500 mg/L paradoxically upgrades the existing water quality standards despite the fact that the current standard cannot be met and that there are external biological, political, and economic reasons that will prevent any increase in aquatic life quality for the Lower Ship Canal.

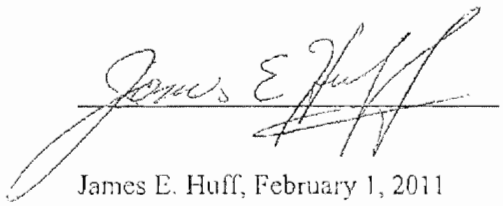
There is no indication in the record I reviewed that the Agency has considered the loss of mixing zones that will occur on the Lower Ship Canal if the Use B designation and the associated proposed water quality standards are adopted to this waterway. The unintended consequences of the Agency's proposed UAA rules for chlorides and sulfates could be addressed by other means, such as the development of Best Management Practices (BMP) for chlorides in place of winter chloride water quality standards and the elimination of the 500 mg/L chloride maximum in the sulfate water quality formula. The Lemont Refinery expects to bring forward further testimony on this issue in Subdocket D.

Conclusion

The uniqueness of the Lower Ship Canal, as outlined in my testimony, is so apparent that a separate use category is needed. The Agency recognized that the Lower Ship Canal met three of the criteria which justified not upgrading the use of this segment. (*See* Exhibit 29.) That recognition occurred before the Board considered the effect of the invasive species such as the Asian carp, and without regard to the snow melt runoff conditions that I have addressed above. The use of the Lower Ship Canal as a control point for prevention of invasive species migration, and the technical infeasibility of attainment of the proposed chloride standard due to its use in receiving snow-melt runoff from the most heavily urbanized area in the state (and hence with the

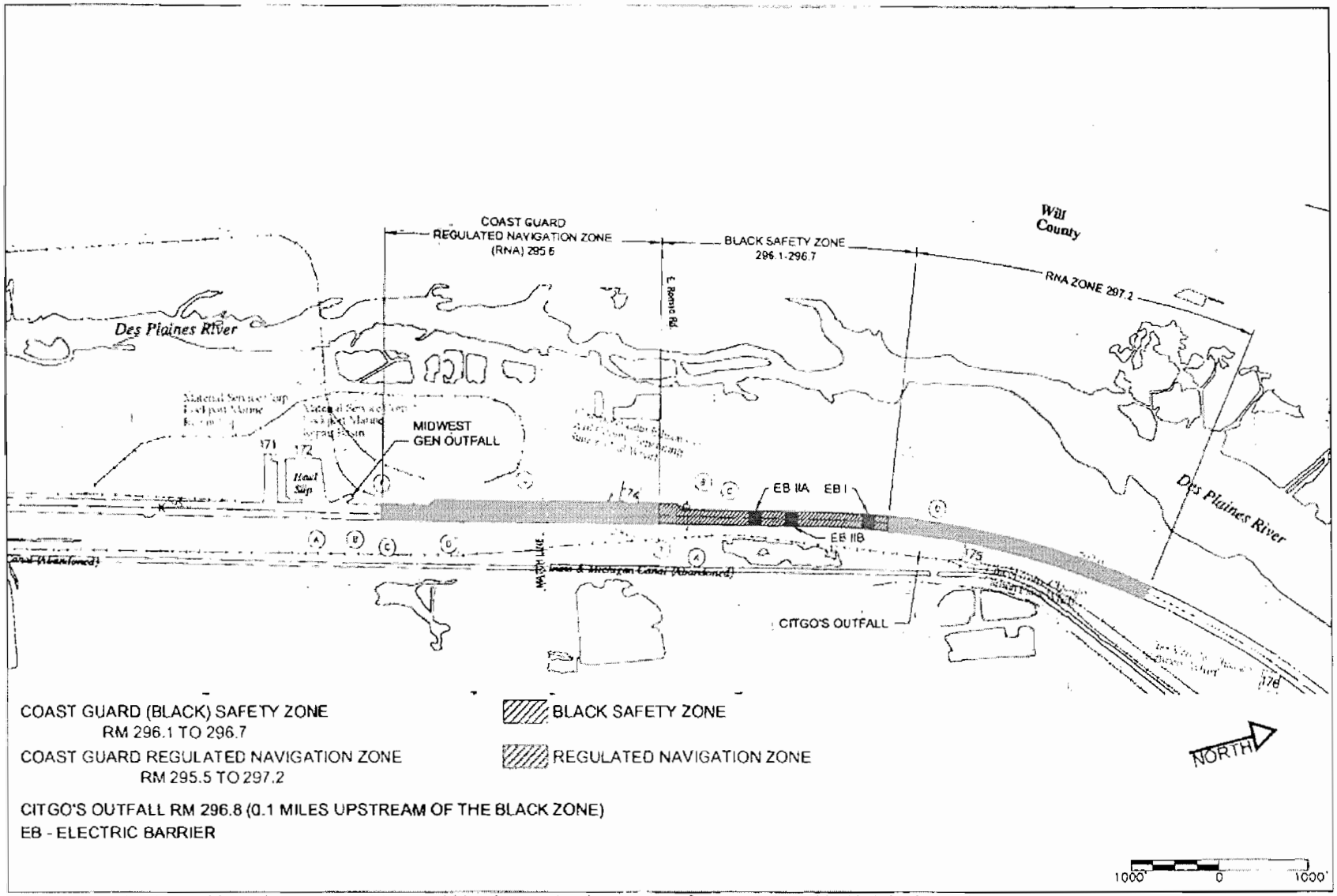
greatest need for de-icing practices) justifies special attention to this segment of the CAWS. Such a use category should recognize the existing uses and limitations of the Canal. Since this set of hearings is focused on the proposed uses of the CAWS, I will not go further into the appropriate water quality standards for the Lower Ship Canal. But I would urge the Board to establish a separate use designation for the Lower Ship Canal and examine in another docket the appropriate water quality standards based on the unique conditions of the Lower Ship Canal.

Thank you, this concludes my pre-filed testimony.



James E. Huff, February 1, 2011

Exhibit A



Testimony of Jim Huff, February 2, 2011, Illinois Pollution Control Board R08-09 (Subdocket C).

Exhibit B

Proposed Use C

STANDARD:
303.238 Chicago Area Waterway System Aquatic Life Use C Waters
Waters designated as Chicago Area Waterway System Aquatic Life Use C Waters are not capable of maintaining aquatic-life populations. They have unique physical conditions, flow patterns, and operational controls designed to maintain navigational use, flood control, and drainage functions in deep-draft, steep-walled shipping channels. These waters are also used for controls, such as electric fish barriers and other methods, with respect to preventing invasive species from migrating from the Illinois River system towards Lake Michigan. Finally, these waters are used to take up waters with high chloride levels as a result of de-icing actions. The following waters are designated as Chicago Area Waterway System Aquatic Life Use C waters and must meet the water quality standards of 35 Ill. Adm. Code 302, Subpart D:

a) The Chicago Sanitary and Ship Canal from River Mile 295.5 to river mile 297.2.

EXPLANATION:
CAWS Aquatic Life Use C waters are utilized in maintaining controls to prevent invasive species, such as Asian carp species, from entering the Great Lakes. In addition, they are artificially constructed or channelized, straight, deep-draft, steep-walled shipping channels with little or no fixed aquatic or overhanging riparian vegetation or other refugia for aquatic life from shipping traffic and predation. They are generally 15 feet or more deep and square or rectangular in cross section. The channel walls are kept in place by sheet piling, concrete, timbers or various combinations of each. Use C waterways are subject to recurring, moderate to severe anthropogenic impacts such as the application of fish poison, the use of electric fish barriers, sediment scouring, wake disturbances of shoreline areas, and rapid changes in water levels and flow velocities; the impacts are attributable primarily to control of invasive species, navigational uses, de-icing and stormwater run-off, and flood control functions.

Exhibit C

CHICAGO SANITARY & SHIP CANAL CHLORIDE LEVELS
AT LEMONT (CITGO's WATER INTAKE)

2010		2009		2008		2007	
Date	Chloride (mg/L)	Date	Chloride (mg/L)	Date	Chloride (mg/L)	Date	Chloride (mg/L)
1/1/10	344	1/2/09	342	1/7/08	562	1/1/07	174
1/4/10	350	1/5/09	297	1/11/08	272	1/5/07	156
1/6/10	301	1/9/09	270	1/18/08	270	1/8/07	113
1/8/10	276	1/12/09	300	1/21/08	256	1/12/07	133
1/11/10	223	1/16/09	436	1/25/08	252	1/15/07	250
1/15/10	311	1/19/09	470	1/28/08	514	1/19/07	239
1/18/10	267	1/23/09	331	2/1/08	556	1/22/07	203
1/22/10	297	1/26/09	282	2/4/08	625	1/26/07	384
1/25/10	342	1/30/09	224	2/8/08	896	1/29/07	286
1/29/10	281	2/2/09	298	2/11/08	848	2/2/07	225
2/1/10	310	2/6/09	214	2/15/08	866	2/5/07	227
2/5/10	259	2/9/09	270	2/18/08	489	2/9/07	181
2/8/10	305	2/13/09	402	2/22/08	351	2/12/07	224
2/12/10	283	2/16/09	355	2/25/08	376	2/16/07	181
2/15/10	833	2/20/09	310	2/29/08	299	2/19/07	895
2/19/10	446	2/23/09	344	3/3/08	460	2/23/07	549
2/26/10	648	2/27/09	376	3/7/08	398	2/26/07	600
3/1/10	559	3/2/09	255	3/10/08	364	3/2/07	734
3/3/10	580	3/6/09	881	3/14/08	333	3/5/07	616
3/5/10	528	3/9/09	167	3/17/08	316	3/9/07	395
3/8/10	422	3/13/09	198	3/21/08	301	3/12/07	250
3/12/10	343	3/16/09	237	3/24/08	294	3/16/07	350
3/19/10	536	3/20/09	252	3/28/08	366	3/19/07	340
3/22/10	261	3/23/09	249	3/31/08	413	3/23/07	281
3/22/10	261	3/27/09	245	4/4/08	333	3/23/07	281
3/26/10	259	3/30/09	237	4/7/08	328	3/26/07	415
3/29/10	285	4/3/09	225	4/11/08	275	3/30/07	258
4/2/10	266	4/6/09	228	4/14/08	247	4/2/07	252
4/5/10	246	4/10/09	210	4/18/08	158	4/6/07	236
4/9/10	187	4/13/09	231	4/21/08	266	4/9/07	232
4/12/10	192	4/17/09	214	4/25/08	251	4/13/07	214
4/16/10	210	4/20/09	240	4/28/08	242	4/16/07	242
4/19/10	215	4/24/09	218	5/2/08	224	4/20/07	259
4/23/10	218	4/27/09	220	5/5/08	90	4/23/07	241
4/26/10	191	5/1/09	155	5/9/08	220	4/27/07	136
4/30/10	197	5/4/09	174	5/12/08	172	4/27/07	136
5/3/10	196	5/8/09	204	5/16/08	172	4/30/07	169
5/7/10	177	5/11/09	187	5/19/08	174	5/4/07	176
5/10/10	165	5/15/09	205	5/23/08	213	5/7/07	215
5/14/10	143	5/18/09	119	5/26/08	204	5/11/07	202
5/17/10	129	5/22/09	155	5/30/08	170	5/14/07	200
5/21/10	234	5/25/09	189	6/2/08	183	5/18/07	191
5/24/10	252	5/27/09	191	6/6/08	163	5/21/07	180
5/28/10	131	5/29/09	349	6/9/08	133	5/23/07	188
5/31/10	336	6/1/09	142	6/13/08	130	5/25/07	170
6/4/10	100	6/5/09	156	6/16/08	157	5/28/07	187
6/7/10	132	6/8/09	159	6/20/08	165	6/1/07	150
6/11/10	127	6/12/09	168	6/23/08	175	6/4/07	136
6/14/10	143	6/15/09	120	6/27/08	171	6/8/07	145
6/18/10	104	6/19/09	115	6/30/08	110	6/11/07	148
6/21/10	457	6/22/09	108	7/4/08	144	6/15/07	144
6/25/10	197	6/24/09	132	7/7/08	154	6/18/07	141
6/28/10	100	6/26/09	197	7/11/08	156	6/22/07	110
7/2/10	580	6/26/09	120	7/14/08	124	6/25/07	119
7/5/10	143	6/29/09	130	7/18/08	135	6/29/07	108
7/12/10	123	7/3/09	84	7/21/08	105	7/2/07	108
7/16/10	122	7/6/09	111	7/25/08	110	7/6/07	115
7/19/10	435	7/10/09	106	7/28/08	111	7/9/07	100
7/23/10	158	7/13/09	116	8/1/08	111	7/13/07	104
7/26/10	100	7/17/09	118	8/4/08	99	7/16/07	103
7/30/10	146	7/20/09	110	8/8/08	109	7/20/07	108
8/2/10	109	7/24/09	104	8/11/08	101	7/23/07	114

Exhibit C

CHICAGO SANITARY & SHIP CANAL CHLORIDE LEVELS
AT LEMONT (CITGO's WATER INTAKE)

2010		2009		2008		2007	
Date	Chloride (mg/L)	Date	Chloride (mg/L)	Date	Chloride (mg/L)	Date	Chloride (mg/L)
8/6/10	554	7/27/09	106	8/15/08	100	7/27/07	99
8/9/10	116	7/31/09	99	8/18/08	99	7/30/07	105
8/13/10	110	8/3/09	100	8/22/08	90	8/3/07	102
8/16/10	503	8/7/09	88	8/25/08	140	8/6/07	102
8/20/10	116	8/10/09	103	8/29/08	126	8/10/07	90
8/23/10	122	8/14/09	90	9/1/08	90	8/13/07	101
8/27/10	102	8/17/09	89	9/5/08	77	8/17/07	99
8/30/10	105	8/21/09	91	9/8/08	88	8/20/07	111
9/3/10	620	8/24/09	85	9/12/08	112	8/24/07	92
9/6/10	80	8/28/09	73	9/15/08	140	8/27/07	88
9/10/10	83	8/31/09	77	9/19/08	110	8/31/07	115
9/13/10	293	9/4/09	100	9/22/08	138	9/3/07	105
9/17/10	89	9/7/09	96	9/26/08	116	9/7/07	101
9/20/10	105	9/11/09	86	9/29/08	88	9/10/07	91
9/24/10	83	9/14/09	88	10/3/08	96	9/14/07	89
9/27/10	445	9/16/09	88	10/6/08	106	9/17/07	94
10/1/10	596	9/18/09	83	10/10/08	86	9/21/07	87
10/4/10	95	9/21/09	86	10/20/08	115	9/24/07	100
10/8/10	89	9/25/09	85	10/24/08	124	9/28/07	105
10/11/10	691	9/28/09	80	10/27/08	119	10/1/07	101
10/15/10	96	10/2/09	79	10/31/08	127	10/5/07	99
10/18/10	894	10/5/09	82	11/3/08	145	10/8/07	110
10/22/10	105	10/9/09	94	11/7/08	146	10/12/07	107
10/25/10	106	10/12/09	92	11/10/08	152	10/15/07	107
10/29/10	646	10/16/09	100	11/14/08	115	10/19/07	104
11/1/10	104	10/19/09	100	11/17/08	147	10/22/07	91
11/5/10	107	10/23/09	118	11/21/08	149	10/26/07	103
11/8/10	684	10/26/09	81	11/24/08	154	10/29/07	114
11/12/10	121	10/30/09	121	11/28/08	149	11/2/07	111
11/15/10	870	11/2/09	72	12/1/08	155	11/5/07	122
11/19/10	123	11/6/09	111	12/5/08	133	11/9/07	120
11/22/10	142	11/9/09	158	12/8/08	244	11/12/07	127
11/26/10	111	11/11/09	134	12/12/08	272	11/16/07	130
11/29/10	87	11/13/09	137	12/15/08	277	11/19/07	128
12/3/10	91	11/16/09	151	12/19/08	313	11/23/07	122
12/6/10	111	11/20/09	137	12/22/08	337	11/26/07	100
12/10/10	295	11/23/09	133	12/26/08	448	11/30/07	103
12/13/10	177	11/27/09	145	12/29/08	385	12/7/07	261
12/17/10	316	11/30/09	119			12/10/07	717
12/20/10	316	12/4/09	119			12/14/07	654
12/24/10	259	12/7/09	143			12/17/07	404
12/27/10	326	12/9/09	144			12/21/07	998
12/31/10	525	12/11/09	286			12/24/07	614
		12/14/09	275			12/28/07	488
		12/18/09	301			12/31/07	412
		12/21/09	259				
		12/25/09	412				
		12/28/09	424				
Average	273		187		231		214
Maximum	894		881		896		998

CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 2nd day of February, 2011, I have served electronically the attached Pre-Filed Testimony of James E. Huff, P.E., accompanying Attachments, and Notice of Filing upon the following person:

John Therriault, Clerk
Pollution Control Board
James R. Thompson Center
100 West Randolph Street - Suite 11-500
Chicago, IL 60601

and by U.S. Mail, first class postage prepaid, to the following persons:

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Exhibit H

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

IN THE MATTER OF:	)	
	)	
CITGO PETROLEUM CORPORATION and	)	
PDV MIDWEST REFINING, L.L.C.,	)	
	)	PCB_____
Petitioners,	)	(Variance - Water)
v.	)	
	)	
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY,	)	
	)	
Respondent.	)	

Affidavit of Brigitte Postel

I, Brigitte Postel, being first duly sworn upon oath, depose and state as follows:

1. I have been employed by CITGO Petroleum Corporation ("CITGO") for the past eight (8) years. I have worked at the Lemont Refinery since October, 2003. At the Lemont Refinery, I have held the position of Environmental Engineer, Water Coordinator. I received a Bachelor of Science in Chemistry from the University of Illinois, Champaign-Urbana and a Masters of Science in Environmental Engineering from Lamar University, Beaumont Texas.

2. I have read the Petition for Extension of Variance dated December 20, 2011, and based upon my personal knowledge and belief, the facts stated therein are true and correct.

FURTHER AFFIANT SAYETH NOT.

Brigitte Postel

Brigitte Postel

Subscribed and sworn to me
before this 20th day of
December , 2011

Notary Public

OFFICIAL SEAL
J. MCCALLUM
Notary Public - State of Illinois
My Commission Expires Dec 8, 2012